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RANGE PLANNING AND OPERATIONS

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This instruction and AFI 13-201, *Airspace Management*, implement AFPD 13-2, *Air Traffic, Airfield, Airspace, and Range Management*. It applies to all Air Force, Air National Guard (ANG), and Air Force Reserve Command (AFRC) Range Operating Authorities (ROA). It provides guidance for the planning, operations, management, safety, equipment, facilities, and security of Air Force ranges. Refer recommended changes and questions about this publication to the Office of Primary Responsibility (OPR) using the AF Information Management Tool (IMT) 847, *Recommendation for Change of Publication*; route AF IMT 847s from the field through Major Command (MAJCOM) publications/forms managers. Ensure that all records created as a result of processes prescribed in this publication are maintained in accordance with AFMAN 37-123 (will convert to AFMAN 33-363), *Management of Records*, and disposed of in accordance with the Air Force Records Disposition Schedule (RDS) located at **https://afrims.amc.af.mil/**.

(ANG) Air Force Instruction (AFI) 13-212, *Range Planning and Operations*, 16 November 2007, is supplemented as follows. This publication is applicable to all Air National Guard (ANG) Ranges. Refer recommended changes and questions about this publication to the Office of Primary Responsibility (OPR) using the AF Form 847, *Recommendation for Change of Publication*; route AF Form 847s from the field through Major Command (MAJCOM) publications/forms managers. Ensure that all records created as a result of processes prescribed in this publication are maintained in accordance with AFMAN 33-363, *Management of Records*, and disposed of in accordance with the Air Force Records Disposition Schedule (RDS) located at **https://my.af.mil/afrims/afrims/afrims/rims.cfm**.

SUMMARY OF CHANGES

This interim change corrects miscellaneous mistakes, removes bulleting and updates references to AFMAN 33-363 from superseded AFMAN 37-123. It also implements new guidance for Improved-Container Delivery System (I-CDS) and Joint Precision Airdrop System deliveries on ranges, revised guidance for the containment of gun ammunition projectiles, fragments, debris and components and clarifies guidance for marking munitions during range clearance. A margin bar indicates newly revised material.

(ANG) Changes in this supplement include: Provides guidance on ANG Range Laser Safety Officer training, identifies the training requirements for range personnel responsible for fire response. Lists specific Personnel Protective Gear for fire response, provides guidance on UAS range operations and procedures, and establishes ANG range Financial Planning Reporting Requirements.

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Chapter 1

INTRODUCTION

1.1. Purpose. This instruction provides guidance for commanders to operate their ranges safely, effectively, and efficiently to meet operational needs while taking appropriate account of potential effects on the environment and the surrounding communities.

1.1. (ANG)Purpose. This supplement further defines Air National Guard (ANG) specific requirements and responsibilities to manage ANG ranges in addition to guidance in Air Force Instruction 13-212. All ANG ranges have significant land mass constraints and/or operational limitations. Due to these limitations, a high level of operational oversight, command and control is required to protect these national training assets.

1.2. Scope. This instruction applies to all USAF-operated ranges except Space Launch Ranges and those dedicated to small arms training addressed in AFI 36-2226, *Combat Arms Program.* Outside the United States, USAF-operated ranges will comply with this instruction, DoDD 4715.12, *Environmental and Explosives Safety Management on Operational Ranges Outside the United States* or host-nation rules whichever is more restrictive. On non-USAF operated ranges, the range user will confirm suitability of weapons delivery or ordnance use with the range operator and comply with this instruction, other service published procedures or host-nation restrictions, whichever is more restrictive.

1.3. Description of Ranges. A range is an area established for operations, training, research and development, and test and evaluation of military systems, personnel, tactics, munitions, and explosives.

1.3.1. Primary Training Range (PTR). PTRs are normally located in close proximity to their primary users, accommodate basic to intermediate air-to-surface, electronic combat (EC), or air-to-air training and consist of a limited land area (typically 5,000-100,000 acres). Typical PTRs contain target arrays, threat simulators, and weapons scoring systems and provide Class A, B, C and/or D service. (See paragraph **1.4.6**).

1.3.1. **(ANG)** ANG managed/operated bombing ranges are service Class "A" ranges. The 266th RANS provides electronic combat support at the Mountain Home Complex.

1.3.2. Major Range and Test Facility Base (MRTFB). DoDD 3200.11, *Major Range and Test Facility Base (MRTFB)* and AFI 99-109, *Major Range and Test Facility Base (MRTFB) Test and Evaluation Resource Planning*, govern specific DoD Test & Evaluation activities. Although MRTFB activities function primarily to enable DoD test and evaluation support missions, they may also perform other missions (operations, training, R&D, etc.). USAF MRTFB activities include: The Air Force Flight Test Center (Edwards AFB); the Air Armament Center (Eglin AFB); the Nevada Test and Training Range (NTTR); the Utah Test and Training Range (UTTR); the 30th Space Wing; and the 45th Space Wing.

1.4. Range Operations and Classifications. The land or sea encompassed within the Danger Area or underlying an air-to-air range used for actual weapon employment must be protected by purchase, lease, or other means to ensure the safety of personnel, structures, and the public from expended weapons, laser and electromagnetic emissions, and target debris.

1.4.1. Air-to-Surface. Air-to-Surface ranges may require a substantial amount of range space and a sophisticated infrastructure to support complex, multi-aircraft operations; air-to-surface and cruise missile employment; aeronautical system testing; unmanned vehicles; and battlefield operations. This infrastructure may include high fidelity threat simulators, visual threat simulators, scoring capabilities, realistic target arrays, command and control systems, communication networks, data display/processing capabilities, instrumentation/debrief systems, flight termination systems, and flight hazard analysis/strike prediction capability.

1.4.1. **(ANG)** ANG Range Control Officers (RCOs) and assigned 1C4x1 personnel will be equipped and trained to act as Joint Terminal Attack Controllers for Close Air Support (CAS) Training missions. Ranges will provide CAS input as well as laser illuminator and designator with wing weapons and tactics directives and in compliance with Joint Tactics, Techniques, and Procedures for Close Air Support, Joint Pub 3-09.3. ANG ranges will provide a simulated threat environment as required by mission training requirements.

1.4.2. Electronic Combat Range (ECR)/Electronic Scoring Site (ESS). ECRs/ESSs provide a simulated electronic threat environment for aircrew combat training. ECR/ESS facilities and equipment can be located at air-to-air or air-to-surface ranges, under or near a Military Training Route (MTR) or a Military Operations Area (MOA), or outside of USAF ranges and Special Use Airspace (SUA).

1.4.3. Surface-to-Air. Surface-to-Air operations cover a wide range of mission requirements. Ranges that support, for example, endo-atmospheric and exo-atmospheric missile intercepts, aeronautical system testing, and ballistic missiles require a substantial amount of range space and a sophisticated range infrastructure. This infrastructure may include high fidelity simulators, visual simulators, end-game scoring capabilities, command and control systems, communication networks, data display/processing capabilities, instrumentation systems, flight termination systems, and flight hazard analysis/strike prediction capability.

1.4.4. Air-to-Air. Air-to-Air operations cover a wide range of mission requirements. Ranges that support, for example, air-to-air operations involving simulated and actual employment of missiles, air-to-air gunnery, aeronautical system testing, unmanned vehicles, and EC require a substantial amount of range space and a sophisticated range infrastructure. This infrastructure may include high fidelity simulators, visual simulators, end-game scoring capabilities, command and control systems, communications networks, data display/processing capabilities, instrumentation systems, flight termination systems, and flight hazard analysis/strike prediction capability.

1.4.4.1. Live Air-to-Air Gunnery Operations. Towed targets and drones are used for live air-to-air gunnery operations. The aircraft performance capabilities and the appropriate munitions ballistic tables determine the airspace and surface area required for safe accomplishment.

1.4.5. Air Combat Training System (ACTS). ACTS ranges are instrumented air-to-air or air-to-ground ranges that allow near real-time observation and assessment or recording and playback.

1.4.5.1. Tethered flight instrumentation range systems provide Time-Space-Position-Information (TSPI) and model weapons impact or flyout for aircrew kill notification

using ground-based computers, towers, and communications relays and aircraft pods or internal avionics.

1.4.5.2. Rangeless / untethered flight instrumentation range systems use autonomous pods, aircraft avionics or recording devices of participating aircraft to provide capabilities similar to a tethered system. Pod-to-Pod or aircraft datalinks can relay kill predictions to participating aircraft for near-real time kill notification.

1.4.6. USAF Range Classifications/Types of Service.

1.4.6. **(ANG)** Due to relatively small landmass and proximity to adjacent cultural areas, class B or C operations are not authorized on any ANG Range.

1.4.6.1. Class A: A manned, ground-scoring capable range with a Range Control Officer (RCO) present on range and controlling aircraft operations.

1.4.6.2. Class B. A manned or unmanned, ground-scoring capable range where no RCO is present on range for controlling aircraft operations. (Note: Class B ranges include ranges where a remotely sited RCO/RSO actively controls aircraft operations)

1.4.6.3. Class C. An unmanned range with no scoring and no RCO control of aircraft.

1.4.6.4. Class D. An instrumented air-to-air range monitored by a Range Training Officer (RTO) to facilitate training.

1.5. Exceptions. Exceptions to this instruction may be granted by AF/A3O-AR. The ROA will monitor implementation and request a review of the exception anytime the circumstances that prompted or impact the request change substantially. Granted exceptions may continue pending review if the change in circumstances does not involve safety.

1.5.1. Exemptions. An exemption is a permanent exception to a specific requirement of this instruction and will only be granted when the conditions cannot be alleviated and the increased risk is acceptable. ROAs will internally review exemptions every five years to validate continued need for the exception.

1.5.2. Waivers. A waiver is a temporary exception and will include a plan to alleviate the condition. Waivers expire one year after approval or when the condition is alleviated, whichever occurs first.

1.5.3. As a minimum, a request for Exemption, Waiver or Review will include the following:

1.5.3.1. Range name, location, ROA and a point-of-contact.

1.5.3.2. Requested exception to specific paragraph of this instruction.

1.5.3.3. Description of the conditions at issue to include:

1.5.3.3.1. Potential alternatives and their impact on test and training operations, maintenance, cost, and other factors deemed appropriate by the requesting agency.

1.5.3.3.2. Proposed actions and procedures to mitigate safety or other issues of concern.

1.5.3.3.3. Operational Risk Management (ORM) Analysis. See paragraph **4.14**.

1.5.3.3.4. Supporting maps, charts, graphics, or other illustrations as appropriate

1.5.3.4. For waiver requests, include a detailed plan to alleviate the condition.

1.5.3.5. Previously granted exemption or waiver.

1.5.4. Exemption, Waiver or Review Coordination and Approval. ROAs will submit requests through their appropriate MAJCOM to AF/A3O-AR. AF/A3O-AR will coordinate with HQ AFCESA/CEXD for Explosive Ordnance Disposal (EOD), Unexploded Ordnance (UXO), and range clearance matters and with AF/TE for test and evaluation ranges.

1.6. Supplemental Electronic Instructions. Supplemental policies that require frequent and responsive revision will be posted on the Range Management Software Tool (RMAST) website/wikipedia (wiki) at **https://www.usafrmast.net/** and will be adhered to by all organizations subject to this instruction.

1.7. MAJCOM Supplements. MAJCOMs may change, or add procedures, as applicable, to this instruction, but must ensure changes are no less restrictive than the basic instruction. If supplemented, MAJCOMs must send a copy to AF/A3O-AR for coordination.

1.8. Improvement Recommendations. Use AF IMT 847, Recommendation for Change of Publication, to recommend changes to this instruction.

Chapter 2

RESPONSIBILITIES

2.1. Headquarters, United States Air Force. HQ USAF, Deputy Chief of Staff, Air, Space and Information Operations, Plans and Requirements, through the Director of Current Operations and Training, has designated the Ranges and Airspace Division (AF/A3O-AR) as the focal point for USAF air-to-ground and air-to-air ranges.

2.1.1. Ranges and Airspace Division (AF/A3O-AR) Responsibilities:

2.1.1.1. Establish airspace/range policy, programming, and requirements IAW AFPD 13-2, AFI 13-201, and this instruction.

2.1.1.2. Serve as OPR for national and regional range and airspace meetings as described in AFI 13-201.

2.1.1.3. Serve as OPR for comprehensive range planning by publishing an Air Force Ranges and Airspace Strategic Vision, and reviewing/approving MAJCOM Range and Airspace Roadmaps and comprehensive range plans for new ranges.

2.1.1.4. Advocate for AF requirements and funding for Combat Training Range (CTR) programs and equipment (Program Element (PE) 64735F and PE 27429F).

2.1.1.5. Sponsor AF Program Element Monitor (PEM) for Readiness Training Ranges, Operations and Maintenance (O&M) (PE 27604F).

2.1.1.6. Sponsor AF PEM for Nevada/Utah Test and Training Ranges (PE 27428F).

2.1.1.7. Serve as the proponent for AF review of all Environmental Impact Analysis Process (EIAP) issues and documents concerning USAF-operated ranges, IAW 32 CFR Part 989, *Environmental Impact Analysis Process*.

2.1.1.8. Coordinate Congressional inquiries concerning Air Force ranges, including operational and environmental issues.

2.1.1.9. Interface with the Federal Aviation Administration (FAA) on airspace/range policy matters through the FAA Headquarters and Regional representatives.

2.1.1.10. Maintain/update USAF sections of FAA Handbooks concerning USAF-operated ranges.

2.1.1.11. Coordinate with other public, private, and tribal interests and agencies as required to support USAF airspace/range requirements.

2.1.1.12. Coordinate and approve all exemptions, waivers, and changes to this instruction.

2.1.1.13. Maintain RMAST website and wiki.

2.1.2. Directorate of Test and Evaluation (AF/TE) Responsibilities:

2.1.2.1. Establish Air Force test and evaluation policy.

2.1.2.2. Determine adequacy of test and evaluation resources to support weapon system development.

2.1.2.3. Resolve developmental and operational test programmatic issues.

2.1.2.4. Advise CSAF and SECAF of test and evaluation issues relating to program execution.

2.1.2.5. Provide final review, authorization and signature for Test and Evaluation Master Plans (TEMPs) prior to Air Force Acquisition Executive (AFAE) approval and signature.

2.1.2.6. Represent test and evaluation interests to the Air Force Requirements for Operational Capabilities Council (AFROCC).

2.1.3. Test Policy and Programs Division (AF/TEP) Responsibilities:

2.1.3.1. Promulgate Air Force test and evaluation policy as the Air Staff OPR for: AFPD 99-1, *Test and Evaluation Process*; AFI 99-103, *Capabilities Based Test and Evaluation*; AFI 99-106, *Joint Test and Evaluation*; AFI 99-108, *Programming and Reporting Aerial Target and Missile Expenditures in Test and Evaluation*; and AFI 99-120, *Forecasting and Programming Munitions Telemetry and Flight Termination Systems*.

2.1.3.2. Review Initial Capabilities Documents (ICD), Capability Development Documents (CDD), Capability Production Documents (CPD), Program Management Directives (PMD), and TEMPs for proper test and evaluation support and responsibilities.

2.1.3.3. Serve as Air Force OPR for the OSD-sponsored Joint Test and Evaluation (JT&E) Program.

2.1.3.4. Answer congressional inquiries regarding test and evaluation matters.

2.1.4. Test Resources and Infrastructure Division (AF/TER) Responsibilities:

2.1.4.1. Oversee the Air Force test infrastructure to ensure adequate facilities are available to support Air Force test and evaluation activities.

2.1.4.2. Formulate the acquisition strategy and overall program plan for test and evaluation resources in conjunction with developing and using commands.

2.1.4.3. Administer the Test Investment Planning and Programming (TIPP) process and Air Force Test and Evaluation Modernization Planning Process.

2.1.4.4. Serve as OPR for the Air Force Test and Evaluation Mission Support Plan.

2.1.4.5. Perform all PEM responsibilities for the following test and evaluation infrastructure and support PEs: Air Force Operational Test and Evaluation Center O&M; Combat Development; Threat Simulator Development, Major Test and Evaluation Investment; Initial Operational Test and Evaluation; Test and Evaluation Support; Facility Sustainment – Test and Evaluation Support; and Facility Restoration and Modernization – Test and Evaluation Support.

2.1.4.6. Promulgate Air Force test and evaluation resources policy and serve as OPR for AFI 99-109.

2.1.5. The Civil Engineer (AF/A7C) Responsibilities:

2.1.5.1. Support the Ranges and Airspace Division's role as the focal point for USAF ranges in the development of policy, advocating for resources, and managing the oversight of Air Force Ranges.

2.1.5.2. Performs all PEM responsibilities for the following range support PEs: Military Construction; Range Facility Sustainment, Restoration, Modernization; Real Property Services for Range Utilities; and operational range environmental support such as operational range assessments and responses, and natural and cultural program execution.

2.1.5.3. Serve as OPR for the Operational Range Assessment Plan.

2.1.5.4. Serve as OPR for OSD meetings requiring representation of the Air Force environmental program manager.

2.1.5.5. Serves as the Environmental Planning Function (EPF) for AF review of all EIAP issues and documents concerning USAF-operated ranges IAW 32 CFR Part 989

2.1.5.6. Serves as OPR for all matters related to EOD, UXO, and range clearance procedures.

2.2. Deputy Under Secretary of the Air Force, International Affairs (SAF/IA) Responsibilities:

2.2.1. Promote international relationships as part of the United States (US) commitment to global peace and security.

2.2.2. Oversee security assistance programs as a means of pursuing US national security goals and objectives. Plans, develops, implements, and administers the US Air Force portions of these programs.

2.2.3. Manage (in conjunction with Air Force Security Assistance Command) Foreign Military Sales cases, and other security assistance cases, involving major systems or requiring special management consideration.

2.2.4. Serve as the focal point for negotiations with foreign nations on issues related to the use of USAF-owned or operated ranges.

2.3. Director, Global Power Programs (SAF/AQP) Responsibilities:

2.3.1. Act as the focal point for development and procurement of subscale and full-scale aerial targets, aircraft tracking equipment, threat simulators and engagement scoring systems.

2.3.2. Perform all PEM responsibilities for the Aerial Targets and Combat Training Ranges PEs.

2.3.3. Respond to Congressional inquiries regarding assigned PEs.

2.4. MAJCOM Responsibilities. All references to MAJCOMs in this instruction include the Air National Guard (ANG) and Commander, Air Force Forces (COMAFFOR) in Combatant Commands.

2.4. (ANG)MAJCOM Responsibilities. For purposes of this AFI, NGB/A3A acts as a MAJCOM and is designated the Functional Manager for Air National Guard Ranges, CRTCs, FOL and ECRs. The ANG Range Council will act as an advisory committee to NGB/A3A. (See attachment 1 for Council Charter).

2.4.1. Define range requirements to accomplish assigned missions.

2.4.2. Ensure training or test Weapons Danger Zones (WDZs) are available concurrent with the introduction of new aircraft, weapons, tactics or training requirements.

2.4.3. Participate in the national, regional, and local range and airspace meetings as described in AFI 13-201.

2.4.4. Review and coordinate all range-related documents to include relevant Integrated Natural Resource Management Plans (INRMPs), Integrated Cultural Resources Management Plans (ICRMPs) and subordinate plans.

2.4.5. Review and approve RCO training programs for the use of Night Vision Devices (NVDs).

2.4.6. Establish procedures and training requirements for EC operations personnel.

2.4.7. Conduct comprehensive range planning and publish a MAJCOM Ranges and Airspace Roadmap that supports the AF Ranges and Airspace Strategic Vision and provides guidance to subordinate range planners.

2.4.8. Review and approve all unit Comprehensive Range Plans (CRPs).

2.4.9. Support effort of subordinate ranges to sustain, restore, and modernize the natural and manmade infrastructure at their ranges.

2.4.10. Coordinate with other public and private interests and agencies as required to support MAJCOM airspace/range requirements.

2.4.11. Review and forward requests for exemptions and waivers to this instruction to AF/A3O-AR.

2.4.12. Maintain range utilization data and forward to AF/A3O-AR upon request.

2.4.13. Develop policy, advocate for resources, and manage the oversight of MAJCOM ranges.

2.4.14. (ACC, PACAF, AETC, AFSOC, USAFE) Sponsor MAJCOM PEM for Readiness Training Ranges, Operation and Maintenance (PE 0207604F).

2.4.15. (ACC) Sponsor PEM for Nevada/Utah Test and Training Ranges (PE 0207428F).

2.5. Range Operating Authority (ROA) Responsibilities. The wing commander, or designated unit commander, responsible for operating a range. For ANG-operated ranges, the range commander is designated as the ROA.

2.5. (ANG)Range Operating Authority (ROA) Responsibilities. For CRTC operated ranges, the Range Officer in Charge is designated as the ROA.

2.5.1. Appoint a qualified military officer or civilian as the Range Safety Officer (RSO).

2.5.2. Obtain the support of or appoint a qualified military officer or civilian as a Flight Safety Officer (FSO) IAW AFI 91-202, *The US Air Force Mishap Prevention Program*.

2.5.2. **(ANG)** The office providing Flight Safety support will be documented in writing.

2.5.3. Appoint a Laser Safety Officer (LSO) IAW AFOSHSTD 48-139, *Laser Radiation Protection Program* if the range accommodates laser operations.

2.5.3.1. **(Added-ANG)** Each ANG Range will have one primary Range Laser Safety Officer (RLSO), designated in writing by the Range Commander or ROA, IAW with AFOSH 48-139.

2.5.3.2. **(Added-ANG)** The RLSO will meet training criteria provided to NGB/A3A and the ROA by the 711HPW/RHDO Optical Radiation Safety Team.

2.5.3.3. **(Added-ANG)** Once the RLSO completes the training, they will be responsible to designate and train LSOs for range operations.

2.5.4. Appoint a Directed Energy Weapon Safety Officer (DEWSO) or obtain DEWSO support from a parent or associated unit if the range accommodates DEW operations.

2.5.5. Ensure compliance with this instruction and other directives applicable to range programs. ROAs may delegate the daily scheduling, operation, maintenance, and management of the range to a subordinate unit.

2.5.6. Develop and implement training, inspection, and maintenance procedures for Range NVDs.

2.5.6. **(ANG)** Perform Inspection/Maintenance IAW MOA with NGB/A3OS (NVD).

2.5.7. Review, coordinate or approve all range-related documents to ensure compatibility with range operations.

2.5.7.1. Within ninety (90) days of taking over such duties and at least annually thereafter, the ROA will coordinate with the servicing installation civil engineering environmental planning function and ensure that range operations are in compliance with applicable environmental requirements and within the scope of all relevant environmental analyses, including any existing management actions or mitigations required.

2.5.8. Lead efforts to sustain, restore, and modernize the natural and manmade infrastructure at their range. This includes identifying the range natural infrastructure requirements and regularly evaluating the health of the natural infrastructure.

2.5.9. Interface with foreign countries at least 6 months prior to exercise participation to collect data for validation or acquisition of WDZ Tool footprints if weapons employment is anticipated.

2.5.10. Maintain scheduling control over all range space and equipment and document scheduling procedures in a Letter of Agreement (LOA), the Range Supplement, or an Operating Instruction (OI).

2.5.11. Submit requests for exemptions and waivers to this instruction through the parent MAJCOM to AF/A3O-AR.

2.5.12. Publish a MAJCOM-approved CRP as outlined in **Chapter 3**.

2.5.12.1. New ranges will not open for operations until the CRP is approved by MAJCOM and reviewed by AF/A3O-AR (and AF/TE for test and evaluation ranges).

2.5.13. Post a DoD-accessible range web page with range information, points-of-contact, updated procedures, access to the local supplement to this instruction, scheduling information, etc. The web page will serve as the initial entry point for users to obtain information on the range and points-of-contact for questions.

2.5.13.1. Public access websites will have links to the ".mil" restricted website (as appropriate).

2.5.13.2. Maintain and post current range imagery for all targets if available.

2.5.14. Publish a local range supplement to this instruction. Supplements will be reviewed and updated annually and may be published in hard copy or electronically. (Where the inclusion of a large amount of target-specific data is impractical, that data may be stored/hosted in any format or system that is readily accessible by users).

2.5.14.1. Range Supplement Content. The range supplement must include, but is not limited to: general range description; services available; hours of operation; range diagrams; range scheduling procedures; operations; laser and attack restrictions, target and weapons authorizations and restrictions – to include composition of target, authorized ordnance; EC operating procedures safety; emergency and jettison procedures; WDZ footprint data; authorized frequency clearances; RCO procedures; chaff and flare operations; night lighting diagrams; night operations; RCO NVD operations; ground laser procedures; support agency procedures and agreements; range clearance operations; pyrotechnic employment procedures and restrictions; and fire suppression responsibilities.

2.5.14.1. **(ANG)** Copies of ANG and Local Range Supplements to AFI 13-212 as well as local Range flight operation, flying and ground safety procedure manuals will be located in the main tower facility.

2.5.15. Implement a preventive and corrective maintenance program to renovate, remove, replace, and overhaul range targets, systems and debris.

2.5.16. Acquire contract services IAW AFI 63-124, *Performance-Based Services Acquisition (PBSA)*. Quality Assurance (QA) personnel will be either military personnel or civil service employees and have responsibility for evaluating and documenting contractor performance IAW the Quality Assurance Surveillance Plan (QASP). QA personnel will be trained and certified IAW locally established procedures.

2.5.17. Include all range clearance and debris removal in the CRP.

2.5.17.1. Although the Civil Engineer manages the EOD program and provides personnel for the range clearance mission, the ROA funds all aspects of range clearance support.

2.5.17.1. **(ANG)** ANG ranges EOD support and funding for EOD support may be pursued through NGB/A3A.

2.5.17.2. Whenever possible, design, locate, and maintain targets to minimize future debris clearance costs to include use of innovative range clearance technologies and best management practices (target material substitution, recycling, etc.).

2.5.18. Maintain a record of each periodic or annual clearance that accurately captures the geographic scope and results of the clearance activity.

2.5.19. Report Range Utilization as directed in the current Range Utilization Tasking Memo available from AF/A3O-AR in the RMAST website library.

2.5.20. Establish procedures for range, ground and explosive safety. Safety of Landing Zones (LZ) and Drop Zones (DZ) will be in accordance with AFI 13-217, *Drop Zone and Landing Zone Operations*.

2.5.21. Perform an ORM assessment coordinated through the parent MAJCOM and HQ AFCESA/CEXD prior to any change to range operations, boundaries, or procedures. Maintain records of and perform a WDZ analysis for all targets, manned facilities/sites, and equipment on the range.

2.5.22. Publish public notices concerning Danger Areas associated with ranges under the ROA's control.

2.5.23. Ensure range boundary signs are posted IAW paragraph **4.12**.

2.5.24. Establish an outreach program to educate installation personnel and the public about the dangers of trespassing and UXO hazards. Using appropriate forums, address range issues that have the potential to influence the surrounding community.

2.5.25. Establish procedures for basic first aid and medical evacuation of aircrew members or range personnel injured during range operations.

2.5.26. Establish range security procedures to include physical safeguards for all range equipment and facilities.

2.5.27. Establish Access Control for hazardous areas identified in **Chapter 4** using physical safeguards or procedures to protect all personnel and property.

2.5.28. Appoint a Range Operations Officer (ROO), in writing, to supervise daily range management, planning, and maintenance. The ROO will be a commissioned officer or DoD civilian employee. For ANG ranges and MRTFBs, the ROA will designate the responsibilities of the ROO. The ROO or designated individual(s) has authority over all ground operations and support functions on the range.

2.5.28. **(ANG)** For ANG ranges the ROO will be a rated commissioned officer appointed by the ROA.

2.5.29. Certify RCOs in writing. An RCO may be a military member, a DoD civilian employee, or a government contractor, but as a minimum will have rated aircrew, Air Traffic Control (ATC), Joint Terminal Attack Controller (JTAC), Enlisted Terminal Attack Controller (ETAC) or previous RCO experience.

2.5.29. **(ANG)** Range Control Officers (RCO) for ANG ranges must be a Rated Officer with a minimum of 500 hours experience in manned aircraft and experience in ordinance delivery on a range. RCOs will be qualified as a Drop Zone Safety Officer if the range has a certified Drop Zone. Waivers to these qualifications will be requested through NGB/A3A. RCOs assigned to ANG Ranges are encouraged to maintain flight currency.

2.5.29.1. Class A Range. For Class A ranges, the RCO is responsible for all range operations and air/ground safety, except in cases where weapons release clearance is delegated. The RCO must maintain continuous radio communication with all aircraft and ground personnel on the range. The RCO must man either the main or flank tower (or another MAJCOM approved location) during Class A operations.

2.5.29.1. **(ANG)** RCOs primary responsibilities are to ensure air and ground safety, munitions deployment and laser operations regardless of cases where weapons releases are delegated. ANG locations (OP) within the range boundaries are authorized under the following conditions: positive identification of the aircraft, continued visibility, two-way

radio with the flights and direct communication with range personnel located in the tower.

2.5.29.2. Aerial Gunnery. The qualification requirements, duties and responsibilities of the RCO will be IAW AFI 11-214, *Air Operations Rules and Procedures*.

2.5.29.3. **(Added-ANG)** RCO Currency. To maintain Range currency, each RCO must:

2.5.29.3.1. **(Added-ANG)** Complete initial qualification/certification training IAW this instruction and local checkout procedures.

2.5.29.3.2. **(Added-ANG)** Perform RCO duty at least once every 365 days.

2.5.29.3.3. **(Added-ANG)** RCO Re-currency. If an RCO becomes non-current the range commander, Range Operations Officer or a current RCO delegated by the range commander may re-certify the RCO by observing him/her in the performance of all RCO duties. After 365 days of non-currency the RCO must complete the entire check out program.

2.5.29.3.4. **(Added-ANG)** The RCO/enlisted duty day should not exceed 12 hours. Duty days in excess of 12 hours require notification and approval of the next higher level of authority. The ROA should establish local requirements for crew rest to ensure crew safety and safe conduct of range operations.

2.5.30. Certify RTOs in writing. For air-to-air training on Class D ranges and in other airspace, the primary RTO responsibilities in addition to flight safety are to facilitate training, provide real-time kill removal, and assist flight leads in mission reconstruction during debriefs. During autonomous air-to-air training (conducted without GCI or AWACS), the RTO may assist aircrews in maintaining aircraft inside airspace boundaries and expedite rejoins upon request. The RTO may be military or contractor furnished, but as a minimum, RTOs must possess "rated mission expertise" in the activity being performed or have Air Battle Manager/Weapons Director experience.

2.5.30. **(ANG)** Range Training Officer (RTO). For the ANG, RTOs must be a rated officer with a minimum of 500 hours in tactical aircraft or have Air Battle Manager/Weapons Director experience. Waivers to these qualifications will be requested through NGB/A3A. RTOs assigned to ANG ACTS Ranges are encouraged to maintain weapon system currency.

2.5.31. Appoint a Vehicle Control Officer (VCO) or Non-Commissioned Officer (VCNCO) to manage vehicle operations and responsibilities IAW AFI 24-301, *Vehicle Operations*.

2.5.32. Ensure all personnel assigned to the range are trained IAW **Attachment 2** and MAJCOM supplements before assuming duties.

2.5.33. Ensure documentation of range personnel training and review records annually.

2.5.34. Conduct a risk assessment to establish published procedures and restrictions for the expenditure of all pyrotechnics (weapons, flares, threat simulators, etc.) and review annually.

2.5.35. Ensure no target or target material is placed on a range until all hazardous material, including potential hazardous waste regulated by the Resource Conservation and Recovery Act, 42 U.S.C. §§ 6901-6992, has been removed from the target or target material, except to the extent that the presence of such hazardous material is essential to the operation or effectiveness of the target or target material.

2.5.36. **(Added-ANG)** The range control tower plan and instrument layout will permit the RCO free movement to any side to observe the flight pattern.

2.5.37. **(Added-ANG)** The ROA will publish a minimum manning matrix addressing: type of mission (day/night), crash response, fire conditions, experience level of range crew/ RCO, level of support to be provided, etc.

2.6. Wing/Center Chief of Safety Responsibilities:

2.6.1. In coordination with ROA, develop and implement required programs, practices, and procedures to reduce risk to the public, personnel and resources, and maximize mission accomplishment.

2.6.2. Advise commanders on safety requirements for all operations.

2.6.3. Provide trained and certified wing experts for safety oversight/guidance on operational and test and evaluation issues.

2.6.4. Provide mission safety requirements for operational and test and evaluation procedures.

2.6.5. Develop standardized safety requirements.

2.6.6. Manage the weapons safety mishap-reporting program.

2.6.7. Investigate, report, and identify corrective actions for safety deficiencies, high accident potentials, and mishaps.

2.6.8. Establish operational safety criteria and establish display, tracking, and data processing parameters.

2.6.9. Provide analysis of flight safety criteria and establish display, tracking and data processing parameters.

2.6.10. Conduct analysis and advise commanders of in-flight impact, explosive, toxic, laser, directed energy, radiological, and acoustic hazards.

2.6.11. Review and coordinate all range operations and training documentation.

2.6.12. Assist in the development of a Wildland Fire Management Plan.

2.6.13. Before exposing people, equipment, or the environment to hazards during test and evaluation, obtain and use safety releases from program offices.

2.7. Installation Civil Engineer Responsibilities:

2.7.1. Provide, sustain, restore, and modernize the range infrastructure, facilities, and environment necessary to support the mission. The supporting Civil Engineering unit will augment these functions if organic or contracted civil engineer teams assigned to the Range Management Office are not sufficient to the task.

2.7.2. Maintain an accurate inventory of Air Force-controlled range real property in the Automated Civil Engineers System (ACES).

2.7.3. Establish standards for the comprehensive planning, design, construction, operation, revitalization, and maintenance of real property facilities to sustain their value to the Air Force, consistent with Air Force policies.

2.7.4. Assist in the development of and submit funding requests for range infrastructure, facility, and environmental requirements.

2.7.5. Deliver services and products normally associated with facility management and operations to include real property transactions; construction, maintenance, and revitalization; utilities; and support of real property installed or similar equipment.

2.7.6. Administer EOD support for range clearance operations IAW AFI 32-3001, *Explosive Ordnance Disposal Program*.

2.7.7. Review, coordinate, or approve all range-related documents to ensure compatibility with community planning, EOD, UXO, and range clearance operations. This includes safety plans, environmental plans, comprehensive plans, etc.

2.7.8. Act as the liaison office for compliance issues with environmental regulatory agencies.

2.7.9. Establish local procedures and provide subject matter expertise with regard to environmental compliance and environmental program requirements.

2.7.9.1. Provide education and training, to include a shop level training, to meet environmental compliance requirements, as needed.

2.7.9.2. Review all permits and permitting requirements to ensure that installations are currently in compliance.

2.7.9.3. Prepare and implement INRMPs, Wildland Fire Management Plans and ICRMPs IAW AFI 32-7064, *Integrated Natural Resources Management* and AFI 32-7065, *Cultural Resources Management Program* respectively.

2.8. Range Safety Personnel Responsibilities:

2.8.1. All RSOs and FSOs are responsible for advising the ROA on the safe conduct of range operations.

2.8.1. **(ANG)** All range personnel are responsible for advising the ROA on all safety issues.

Chapter 3

RANGE PLANNING

3.1. Planning for Ranges. Accomplish range planning to ensure future training and testing needs are met. When planning indicates that a major change is required, the Major Actions Planning Process must be followed as outlined in paragraph **3.3**.

3.2. Comprehensive Range Planning. Comprehensive Range Planning is accomplished to identify shortfalls in current and projected capabilities and guide sustainable range development to close the shortfalls. A hierarchy of plans addressing the ten investment areas for ranges will guide future development while identifying and integrating range requirements. The detailed planning cycle timeline is published in the Air Force Ranges and Airspace Strategic Vision.

3.2.1. Air Force Ranges and Airspace Strategic Vision. AF/A3O-AR will publish an AF Ranges and Airspace Strategic Vision to identify service-wide needs, consolidate the inputs of the MAJCOMs, CTRs, TIPP and other services and agencies as applicable and guide MAJCOM- and range-level planning. AF/A3O-AR will initiate a review process for the AF Ranges and Airspace Strategic Vision document every four years in conjunction with the development and release of the Quadrennial Defense Review (QDR).

3.2.2. AF/A3O-AR participates in two planning forums that provide unique test and training community inputs to The AF Ranges and Airspace Strategic Vision.

3.2.2.1. Combat Training Range (CTR) Executive Reviews. HQ ACC/A3A, with the assistance of AF/A3O-AR, SAF/AQPW, AAC/WMR and 84th CBSG, will conduct semi-annual executive-level reviews of all CTR programs covered by PMD 0111(35)/PE 0604735F/0207429F *Air Combat Training Systems*. ACC, AETC, AFRC, AFSOC, ANG, PACAF, and USAFE will send senior voting representatives (normally O-6) to the CTR Executive Reviews. AF/A3O-AR, AAC/WMR, 84th CBSG, and SAF/AQPW participate as non-voting members of the CTR Executive Reviews. The CTR Executive Reviews provide a forum to discuss ongoing programs, advocate new requirements, and vote on funding priorities. The voting members (as delegated by their parent MAJCOMs) have approval authority on CTR funding allocations and program validation. They also provide requirements direction to AAC/WMR, SAF/AQPW, and 84th CBSG. ACC/A3A, in conjunction with the user, AAC/WMR, and 84th CBSG prepares the necessary requirements documentation to implement user-prioritized programs. Day-to-day "user" management of CTR programs is the responsibility of ACC/A3A per the Seven-Command CTR Charter and the "total force" concept.

3.2.2.1.1. CTR Program/Procurement of Instrumentation, Threat Systems, and Test/Training Range Engineering Development. CTRs need improvements to increase combat realism, aid tactics development, and enhance day-to-day training. This includes realistic simulations of the projected threat environment, as well as instrumentation for: readiness training, Operational Test & Evaluation (OT&E), tactics development and evaluation, command and control, safety, and real-time flight monitoring. These systems provide precise monitoring, reconstruction, and debriefing of aircrews after single and multiple aircraft training missions, including reaction to

air defense threats and live or simulated ordnance exchanges. A continuous modernization program is required to ensure CTRs meet these requirements.

3.2.2.1.2. Range Improvement Requirements. HQ ACC/A3A is the lead agency for range improvement requirements representing AETC, AFRC, AFSOC, ANG, PACAF, and USAFE. AMC will develop Mobility Air Forces (MAF) requirements and coordinate with the CTR. AFOTEC will coordinate on Combat Air Forces (CAF) requirements that need an OT&E input or may effect OT&E as well as Development Test and Evaluation (DT&E), Force Development Evaluation (FDE), JT&E, and Expeditionary Force Experiments (EFX). The members of the CTR Executive Reviews, AAC/WMR, 84th CBSG, and the test community should attempt to combine requirements and form partnerships to seek procurement synergy.

3.2.2.2. Test Investment Planning and Programming (TIPP) Process. Test infrastructure is a key contributor to the test process. AFPD 99-1 states, "The Air Force will operate, maintain, and improve test and evaluation facilities, including the Major Range and Test Facility Base (MRTFB) … to support US Air Force, Department of Defense, and other valid user requirements. In addition, the Air Force will continually evaluate test infrastructure requirements and capabilities to ensure essential Air Force needs are met, and to avoid unnecessary duplication and expense of excess test resources."

3.2.2.2.1. The TIPP process governs all investments in the Air Force's test and evaluation infrastructure within the AF Improvement and Modernization (I&M) program elements (Major Test and Evaluation Investment and Threat Simulator Development) and identifies potential joint Service investment for funding under the Central Test and Evaluation Investment Program (CTEIP). TIPP is used to identify the most critical shortfalls in the test and evaluation community, develop alternatives to solve them, and deliver a corporate investment plan for budgeting and funding through the Planning, Programming, Budgeting, and Execution (PPBE) process. HQ AFMC/A3 manages the Air Force TIPP process to identify test resource investments needed to support military systems testing. Those investments that have possible multi-Service applicability may be referred to the CTEIP for funding IAW AFI 99-109.

3.2.3. MAJCOM Ranges and Airspace Roadmaps. MAJCOMs will produce a Ranges and Airspace Roadmap approved by AF/A3O-AR. Each roadmap should have a ten-year planning horizon, support the Air Force Ranges and Airspace Strategic Vision, focus on the ten investment areas described in paragraph **3.2.4.1.1** and compare current and future mission needs against the current range capabilities to identify shortfalls. It will describe the MAJCOM vision for the future and the strategies to attain that vision. The roadmap will also provide tailored planning direction to each range to guide their comprehensive range planning. Roadmap development provides an opportunity for all MAJCOM organizations and staff to provide inputs, coordinate actions within the command and across the MAJCOM staff. MAJCOMs will coordinate the plan with all other MAJCOMs that it supports on its ranges to ensure their needs and concerns are addressed.

3.2.4. Comprehensive Range Plans (CRPs). Each ROA will maintain a CRP for coherent and sustainable development that considers the interests of all organizations supporting or using the range. CRPs will be reviewed bi-annually and revised at least every four years or

whenever significant changes occur. MAJCOMs will review and approve all CRPs. CRPs for new ranges require additional approval of AF/A3O-AR (and AF/TE, for test and evaluation ranges).

3.2.4.1. CRP Format. Each plan will consolidate the individual planning of all range support organizations. Each plan will include an executive summary, address the ten range investment areas and assess the situation, communicate a vision and formulate a strategy.

3.2.4.1.1. Range Investment Areas. The main body of the plan is written for the technical person, details analysis of the investment areas and validates the requirements in support of the vision for the range. It culminates in a time-phased investment program to support each specific range objective to enable summarizing investments by FY, investment area and objective to support resource programming. Over time, strategy execution will be measured against the plan and documented in subsequent revisions to the CRP. The ten investment areas below are detailed in the Range and Airspace Strategic Vision published by AF/A3O-AR

3.2.4.1.1.1. Land. This investment area includes all surface land and water areas required for the range that the military owns, leases or controls by easement. It also includes land or water areas surrounding the range or underlying military airspace that may be affected by range use.

3.2.4.1.1.2. Airspace. This investment area addresses all airspace controlled by the ROA to include SUA. Airspace considerations include proximity to user airfields, airspace volume and attributes and the utilization as a function of time. Other considerations include FAA operating relationships and interface with the National Airspace System (NAS).

3.2.4.1.1.3. Environmental. This investment area includes natural infrastructure on the range and its short- and long-term effect on the military value of the range. Management practices and implementation of applicable regulations and policy are included when they interface with military operations.

3.2.4.1.1.4. Unexploded Ordnance/Range Debris. This investment area addresses the management of Material Potentially Presenting an Explosive Hazard (MPPEH) and other range debris on operational ranges. It includes a program to remove such material and maintain records of use and removal IAW AFMAN 33-363. Also included are efforts to reduce levels of debris and enhance clearance practices.

3.2.4.1.1.5. Physical Plant. This investment area involves infrastructure requirements primarily dealing with Civil Engineering and includes the construction, upgrade and maintenance of facilities, roads, land, and utilities such as water, power, gas, sewage, and drainage.

3.2.4.1.1.6. Scoring and Feedback Systems. This investment area includes Air-to-Surface scoring systems, air combat mission record and replay capabilities, and Electronic Counter Measures (ECM) analysis systems for feedback. It also includes the specialized measurement, tracking and analysis systems required to support test activities.

3.2.4.1.1.7. Communications Systems. This investment area includes Ground-Air and point-to-point systems and support on the ranges and communications backbones such as microwave and fiber systems. Also covered are information protection requirements (such as encryption) and radio, data link, and instrumentation frequency management.

3.2.4.1.1.8. Integrated Air Defense/Counter-air Defense Systems. This investment area covers types and quantities of EC equipment, Information Warfare and Information Operations assets, Space Warfare and Low Observable resources, and the uses of expendables (chaff and flares) and towed decoys.

3.2.4.1.1.9. Targets and Target Arrays. This investment area addresses the types and quantities of surface and aerial targets including conventional, strafe, urban warfare and buried targets in configurations for covered, concealed, deceived, hardened, mobile and moving targets.

3.2.4.1.1.10. Management. This investment area addresses overarching systemic or institutional practices and generally covers procedures and administration. This area includes such activities as programming and supervision as well as scheduling issues, the modernization planning process, and reducing duplication of effort among the ranges. Also included are range functions not in the other investment areas such as mission control and control/scheduling centers, safety, noise management and public affairs. The management of the ranges encroachment and sustainability programs.

3.2.4.1.2. Situation. In this section, describe the current state of the ranges and airspace and any funded improvements. Provide a brief summary of utilization and maintenance status and a current baseline assessment for each investment area. The region of influence of the range and airspace operations will be defined and analyzed to identify the current and projected interface between the community and operations, and highlight encroachment and sustainability issues. This discussion will conclude with an analysis of Strengths, Weaknesses, Opportunities and Threats.

3.2.4.1.3. Vision. In this section, identify future capabilities and priorities directed by higher level plans anticipated to accommodate changing missions, modified tactics and new weapons systems. This section should include a vision statement that succinctly captures an image of the future we seek to create. Specific thrusts will be captured and organized into overarching goals.

3.2.4.1.4. Strategy. Formulate a strategy that will provide the specific direction to attain the Vision and over-arching Goals. The service-level and MAJCOM-level plans will include guidance to the Vision section for the subordinate levels. The CRPs will have specific objectives in each of the investment areas to support the goals. This section will include a management approach for accomplishing and overseeing progress.

3.2.4.1.5. CRP Supporting Documents. Since the CRP is the composite analysis of numerous specialized documents it is vital that these supporting documents be readily available and preserved for the life of the range. All referenced documents will be maintained in a document management system available to all range staff and

available electronically. Civil Engineering is responsible for maintaining all records related to land/water area deeds, leases, permits, easements, etc. Graphical data sets used to produce graphics and support analyses will be preserved and continuously updated in a Geographic Information System that is available to all range staff.

3.3. Major Actions Planning Process. Major actions to establish, change use of, modify, or delete test/training space (including ranges or permanent airspace), except those purely administrative in nature, are reviewed by units, MAJCOMs, and HQ USAF via the Test/Training Space Needs Statement (T/TSNS) process detailed in AFI 13-201.

3.3.1. Development of the Proposals. Proposal development will comply with the *National Environmental Policy Act of 1969 (NEPA)*, 42 U.S.C. §§ 4321–4347. Proposals can consider single (i.e. distinct) actions or numerous actions covered by an overarching plan (i.e., Comprehensive Range Plans). NEPA requires proponents for all major federal projects to consider environmental impacts, prior to making an irrevocable or irretrievable commitment of resources (personnel, facilities or dollars). While NEPA does not require the decision-maker to choose the most environmentally advantageous alternative, it does require the decision-maker to make an informed decision and consider all potential impacts. Refer to AFI 32-7061, *The Environmental Impact Analysis Process*, as promulgated at 32 CFR Part 989, for specific guidance. Range specific planning factors are listed on the RMAST wiki website under Range Construction and Maintenance.

3.3.2. Airspace Establishment and Land Acquisition.

3.3.2.1. Airspace. Before establishing a need for new airspace, proponents must ensure they comply with AFI 13-201, AFI 32-7061, and applicable FAA Orders & Directives.

3.3.2.2. Land. Land acquisitions require lead times as long as 7 years. Proponents need to work through the Base Civil Engineer with the Unit/MAJCOM, SAF/IEI, and the AF Real Property Agency (AFRPA) to acquire land IAW AFI 32-9001, *Acquisition of Real Property*. Factors to be examined when considering the acquisition of land include confirmation that the proposal cannot be accommodated within or by modifying existing areas, and issues associated with procuring private land or withdrawing federal lands. The Federal Land Policy and Management Act of 1976, and Title 43, United States Code, Section 155-158, *Engle Act*, require Congressional approval for any public land withdrawal, reservation, or restriction of over 5,000 acres for any DoD project or facility. In addition, proponents need to prepare an Environmental Baseline Survey (EBS) for land acquisitions IAW AFI 32-7066, *Environmental Baseline Surveys in Real Estate Transactions*.

3.3.2.3. Funding. If funding for range real estate is received in one allotment, acquisition for all lands should proceed immediately. If funds are received incrementally over multiple budget cycles, acquisition should proceed according to a plan that will obtain an initial operational capability at the earliest date. For example, a range complex consisting of a Class A and two Class C tactical range areas can be acquired in three increments. Funds from the first increment should be used to acquire lands providing the highest benefit to the Air Force. Each increment should provide an operational capability of its own.

3.3.2.4. Other Agency Cooperation. Agreements with other federal, state, local, and tribal government agencies should be finalized and signed during the acquisition phase. In some locations, USAF ranges require liaison and cooperation with many agencies in connection with livestock management, fish and wildlife conservation, forest management, immigration and border control, irrigation development, etc. It is important that any issues effecting operations or safety be settled before the range activation date. Base commanders having parent command jurisdiction of an Air Force range must investigate and ensure liaison and cooperation with appropriate agencies of federal, state, local, and tribal governments. Refer to AFI 32-7060, *Interagency and Intergovernmental Coordination For Environmental Planning* for specific requirements. Coordination IAW Executive Order 12372, *Intergovernmental Review of Federal Programs*, 14 July 1982, is required for any actions that might influence another agency's plans, programs, or projects.

3.3.2.4.1. Additional information on coordination, outreach and interagency/ intergovernmental agency cooperation can be found on the RMAST website/wiki.

3.3.3. Moving or establishing a live munitions area is a Major Action. To do so, the ROA will accomplish a T/TSNS and will comply with the EIAP with the assistance of the parent MAJCOM.

3.3.4. Closing or Transferring of Ranges. When declared excess to the range requirements by the ROA, land will be surface cleared in accordance with AF standards. The ROA will notify the supporting Civil Engineering organization with real property responsibility of the excess status for subsequent action to determine a new use and accomplish required clearance for the new use. It is Air Force policy to clear safe for the proposed future land use and issue Certificates of Clearance for excess ranges or ranges converted to other uses but remaining on the installation property inventory. The supporting Civil Engineering organization will ensure clearance IAW 6055.9-STD, excess declaration IAW AFI 32-9004, *Disposal of Real Property* and NEPA actions IAW 32 CFR Part 989, Airspace transfer IAW AFI 13-201 and disposition of government owned range equipment and facilities IAW with MAJCOM guidance.

3.4. National, Regional, and Local Range and Airspace Meetings. Actions involving use, creation, modification, or transfer of military airspace/ranges generate significant public interest. The Air Force must be prepared to address concerns raised at the local, regional, or national level during the development of any airspace/range action. AFI 13-201 describes the various forums that allow units, MAJCOMs, and HQ USAF to focus on airspace/range issues and exchange information and lessons learned in airspace/range development.

3.5. Planning Tools. Each range will maintain documents and graphical information used in planning IAW AFMAN 33-363 to ensure that records remain available to range staff.

3.5.1. Document Management System. Documents may be stored and indexed physically or electronically. If managed electronically, documents should be made available to all range users and supporters through secure means (request/reply or secure access).

3.5.2. Geographic Information System (GIS). The most basic of systems would be hard copies of maps that describe the range's attributes in each of the investment areas. Ideally, range geospatial data should be maintained in an accessible, relational database. The database

of geospatial features should be readily accessed by the GeoBase web-based viewer application as well as the range management and scheduling tools.

3.6. (Added-ANG) Financial Planning Reporting Requirements. ANG Ranges will submit copies of Fin Plans (due 1 July) and spending reports (due 15 Nov) annually to NGB/A3A.

Chapter 4

RANGE OPERATIONS AND SAFETY

4.1. Range Operations. Range operations will be IAW this instruction, AFI 13-201, AFI 11-214, T.O. 1-1M-34, *Aircrew Weapons Delivery Manual*, T.O. 1-1M-34-1, *Aircrew Weapons Delivery Manual (classified)*, aircraft specific weapons delivery T.O.s, aircraft specific AFI 11-2MDS series, and Air Force Weapons School (AFWS) instructional texts.

4.1. (ANG)Range Operations. RCOs must be familiar with Joint Publications 3-09 Doctrine for Joint Fire Support, 3-09.1 Joint Laser Designation, and 3-09.3 Joint Tactics, Techniques, and Procedures and Multi-Service Tactics, Techniques, and Procedures for the Joint Application of Firepower (JFIRE) for Close Air Support to ensure range procedures are compatible and consistent with appropriate operational doctrine.

4.1.1. Additional operating restrictions during range clearance and maintenance are contained in paragraph **7.6**.

4.2. Written Agreements for USAF-Operated Ranges. The ROA will maintain a copy of all agreements pertinent to their range and ensure they are readily available to the ROO and RCO.

4.2.1. Domestic Users. The ROA or MAJCOM will conclude written agreements with any regular range user not identified in the range supplement. Written agreements are not required for limited use during exercises, deployments, evaluations, or inspections.

4.2.2. Foreign Users. These agreements include the Memorandum of Understanding (MOU), Letter of Agreement (LOA), Host-Tenant Support Agreement (HTSA), Inter-service Support Agreement (ISA) and Foreign Military Sales (FMS) Letter of Offer and Acceptance. Each signatory ensures that these agreements meet the needs of the organization without compromising the mission and without obligating the organization beyond its intent or authority. Coordinate the draft agreement with the staff Judge Advocate General. If a conflict arises regarding one of these agreements, the ROA should resolve the issue at the appropriate level.

4.2.3. Types of Written Agreements.

4.2.3. **(ANG)** Memorandums of Understanding, Host-Tenant Support Agreements and other formal agreements between Air National Guard Units and other MAJCOMs/Services concerning range use will be forwarded to NGB/A3A for review.

4.2.3.1. Memorandum of Understanding. A MOU is required for Air Force units to use weapons ranges belonging to another nation. Individual units normally author these MOUs. MAJCOM/FM, JA, and the State Department Mission in the host country review these MOUs for legal and financial implications.

4.2.3.2. Letter of Agreement. Use LOAs to specify procedures at the local level, such as those between the operating agency and the controlling agency of the local airspace.

4.2.3.3. Host-Tenant Support Agreement and Inter-service Support Agreement. When required, prepare an HTSA or ISA IAW AFI 25-201, *Support Agreements Procedures*. As a guide, an HTSA or ISA should be entered into when a unit from another service uses an Air Force owned or operated range more than 12 days per calendar year or

supporting the recurring use by another service is a significant portion of range utilization.

4.3. Joint and Shared Use of Ranges.

4.3.1. Joint Use. Joint Use will be established by HTSA, ISA, LOA, license, or other written agreement between the Host range and joint user IAW AFI 25-201. All written agreements should ensure the ROA can terminate user activities detrimental to the range's natural, cultural, or physical infrastructure and obtain compensation or redress.

4.3.2. Shared Use. Shared use of ranges with non-DoD users is encouraged when it will not compromise public safety, nor detract from mission accomplishment, nor impair range operations in any way. In all cases, public access to live ordnance areas and other areas where hazardous activities occur is prohibited until they are decontaminated IAW DoD 6055.9-STD or other appropriate standards determined by the DoD Explosives Safety Board, or meet the criteria set forth in paragraph **4.12.4**. All visitors granted access to the range must be briefed on range safety IAW paragraph **4.13.4.3**. Shared Use may be characterized as either Concurrent Shared Use or Non-Concurrent Shared Use.

4.3.2.1. Concurrent Shared Use. Civil activities may occur concurrently with range operations provided human access is prohibited in the Hazard Area. Agriculture, grazing and timber management are examples of activities that are conducive to concurrent shared use. The ROA will determine suitability and manage grazing programs IAW AFI 32-7064.

4.3.2.1.1. Grazing Programs can be a complementary activity on USAF ranges. Grazing programs on Department of the Interior lands withdrawn for USAF use are generally the responsibility of the Bureau of Land Management (BLM). An INRMP must be prepared for all ranges addressing all issues associated with natural resources.

4.3.2.1.2. Other Commercial Activities. Air Force ranges may also offer other commercial uses such as timber management, agricultural out-leasing, and mining. Again, many of these programs are generally the responsibility of the BLM. The Minerals Management Service of the Department of Interior manages the oil and gas exploitation on the outer continental shelf applicable to USAF over-water ranges.

4.3.2.2. Non-Concurrent Shared Use. Civil use of range land and airspace may be allowed within the Hazard Area (exclusive of live ordnance areas) IAW paragraph **4.12.4**. Recreation and education programs are often compatible because many ranges encompass large airspace, land, or water areas and may contain significant natural resources, wild areas, historical sites, or archaeological sites. As custodian of this public property, the USAF has the responsibility to maintain it in the best manner possible consistent with the military mission. The INRMP will outline public access to natural resources. This plan is prepared in cooperation with the US Fish and Wildlife Service and the state fish and game agency. Additionally, the Cultural Resources Management Plan will manage and preserve sensitive areas while addressing public concerns.

4.4. Supersonic Flight. Supersonic flight restrictions within the U.S. National Airspace System are contained in AFI 13-201. Overseas locations will comply with host nation rules.

4.5. Flare, Chaff and Electronic Attack (EA) Employment. Unless further restricted by MAJCOM or local supplements, flares will be employed IAW AFI 11-214, while Chaff and EA will be employed IAW CJCSM 3212.02, *Performing Electronic Attack in the United States and Canada for Tests, Training and Exercises* and AFI 11-2MDS series instructions. This guidance assumes use of current inventory flares and chaff, and an adequate environmental assessment of action. The use of flare or chaff cartridges having significantly different characteristics (pyrophoric flares or double squibbed chaff) is restricted to authorized test and evaluation activities until their use is authorized by the appropriate MAJCOM.

4.5. (ANG)Flare, Chaff and Electronic Attack (EA) Employment. Minimum altitude will be no lower than 1000' AGL for employment of countermeasure flares.

4.6. Jettison Areas. All ranges will have an area within the Hazard Area designated for jettison of ordnance and stores. The location of jettison areas and jettison procedures will be designed to minimize the hazard to ground personnel and range structures as well as aircraft and aircrew.

4.7. Armament Safety Procedures. Prior to first release when carrying expendable ordnance (live, inert, or training), final switch configuration for weapon release will not be accomplished until the aircraft is in such a position that any accidental release will be contained within the range. MAJCOMs will develop specific guidance for armament system configurations for multiple passes. After completing final weapons delivery, each flight member will perform a weapons system safety check. Refer to AFI 11-214, aircraft specific AFI 11-2MDS series operating procedures, and individual range supplements for additional guidance.

4.7. (ANG)Armament Safety Procedures. During multiple pass operations; aircraft operating on ANG range will abide by either their aircraft specific 11-2MDS operating procedures or the local range supplement whichever is more restrictive.

4.8. Weapons Release Authority. Acceptance of weapons release authority incurs sole responsibility for the safe release of ordnance.

4.8.1. Terminology Conventions. To prevent miscommunication, the term "cleared" will only be used when authorizing weapons release. For all other matters, "approved", "authorized" or any term other than "cleared" will be used. The term "continue" will be used IAW JP 3-09.3, *Joint Tactics, Techniques, and Procedures for Close Air Support (CAS)* to acknowledge requests or indicate approval to proceed with an attack or action without providing clearance to release any ordnance yet.

4.8.2. On Class A ranges, weapons release authority resides inherently with the RCO. For each pass, the RCO will authorize weapons release with a "cleared hot" radio call unless release authority has been delegated. The RCO may delegate weapons release authority to a qualified flight lead, individual pilot, Forward Air Controller-Airborne (FAC[A]), JTAC or other briefed person by issuing an "Authorized (flight lead, individual pilot, FAC[A], JTAC, etc.) Control" radio call. The RCO, who will remain in either the main or flank tower (or another MAJCOM approved location), retains overall range authority at all times and can withdraw release clearance or abort a release at any time.

4.8.2. **(ANG)** Weapon Release Authority. (Added) RCOs primary responsibility is to ensure air and ground safety, regardless of cases where weapons release authority is delegated.

4.8.2.1. **(Added-ANG)** The RCO will ensure that any JTAC given release authority is current and qualified. All non-current or non-qualified JTACs must be under direct supervision of a qualified JTAC Instructor to be allowed release authority on the range.

4.8.3. On Class B and C ranges, weapons release authority devolves hierarchically to the JTAC, FAC(A), flight lead, individual pilot or other briefed person who may then delegate the authority as desired.

4.9. Simulated Weapons Release Authority. Except during flight-lead or individual control, to emulate the clearance procedures contained in JP 3-09.3, the weapons release authority should issue a "continue dry" radio call to signify authority to simulate weapons release.

4.10. Weapons Employment and Airdrop Operations.

4.10.1. Do not employ weapons outside approved DoD SUA.

4.10.2. The ROA will notify the public when a WDZ footprint will fall outside the lateral confines of the rangeland and will conduct a risk assessment to minimize the hazard to the public and non-DoD property.

4.10.3. Except as noted below, ROAs will prohibit weapons employment unless an applicable WDZ Tool/SAFE-RANGE footprint, test footprint or surface danger zone has been applied to the target for the specific delivery platform, weapon and employment parameters. ROAs may expedite analysis by grouping targets together or combining aircraft type, weapon type, and tactics, as appropriate. Test footprints are not authorized for training missions, nor are applicable training footprints, by themselves, sufficient for test missions, but training footprints may be used as part of the ROA's overall risk assessment.

4.10.3.1. Where containment is software selectable, ROAs will apply SAFE-RANGE footprints, weapons danger zones and surface danger zones (SDZs) that provide the following containment of projectiles, fragments, debris and components as a minimum:

4.10.3.1.1. Surface fires: 99.9999% (Expressed as 1:1,000,000 escapement for SDZs)

4.10.3.1.2. Aviation-delivered gun ammunition: 99.999%.

4.10.3.1.3. All other aviation-delivered ordnance: 99.99%.

4.10.3.2. For test missions only, if the application of footprints would preclude the accomplishment of test objectives, the ROA, in conjunction with the test Safety Review Board (SRB) may authorize the use of a risk management policy. The ROA will perform, and the SRB must validate, a risk assessment to identify and minimize hazards consistent with test objectives. (See AFI 99-103, *Capabilities Based Test and Evaluation*)

4.10.3.3. ROAs may continue to use legacy SAFE-RANGE footprints until the end of the sixth month following ACC/A3A's official fielding of the applicable, successor, probabilistic WDZ Tool footprint.

4.10.4. The WDZ Tool is the successor to the SAFE-RANGE Program. It creates probabilistic weapons impact footprints to help the ROA conduct safe range operations by defining aircraft-delivered WDZs per paragraph **4.12.4.1**. The WDZ tool software identifies weapons impact point probabilities from a variety of platforms and parameters, providing an analytical foundation for sound and objective range planning and execution decision-making.

Although similar to SAFE-RANGE, the WDZ tool is a joint-use range safety tool with a different hazard analysis methodology.

4.10.4.1. WDZ tool methodology. The WDZ tool application methodology allows the ROA to identify possible target locations; modify allowable delivery ground tracks to eliminate or reduce hazards; identify the best location for range improvements; or design a new Impact Area/range. The methodology is based on WDZ footprints developed from a combination of actual weapon impact data and simulation results. A WDZ defines the minimum land required to employ a given munition safely, using a certain aircraft and delivery tactic, over a specific soil density and target type. Each WDZ footprint incorporates a probability distribution function (PDF), which provides the information necessary to perform a quantitative risk assessment and evaluate the relative risk of an identified hazard. See the RMAST wiki website for detailed application methodology for WDZ footprints for air-to-ground training operations.

4.10.4.2. Training WDZ Footprints. HQ ACC/A3A is the lead USAF agent for procuring and modifying WDZ footprints except as noted below. Other MAJCOMs, services and foreign countries will fund their unique WDZ footprint requirements to include any costs for software licenses and equipment. MAJCOMs will coordinate with ACC/A3A at least 6-9 months prior to the need date. Foreign countries will coordinate Direct Commercial Sales acquisition through ACC/A3A at least three months prior to the need date. For acquisition through the FMS Case, foreign countries will submit a Letter of Request through SAF/IA at least six months prior to the need date.

4.10.4.2.1. Specialized Footprints. Specialized WDZ footprints are available from HQ AFSOC/A3TW for the MH-53 (Sidefire program) and the AC-130H/U (Gunship Safety Footprint program).

4.10.5. Test Footprints. MRTFB ROAs are responsible for ensuring test footprints are developed and applied for test missions (See AFI 99-103).

4.10.6. Precautions with expendable munitions. Aircraft with free-falling and/or forward-firing ordnance will not over fly or point their guns at manned sites with intent to expend or employ weapons. Aircraft with moveable guns, such as helicopters and AC-130 Gunships, will not point their guns at any manned site. Facilities where the risk of damage is deemed unacceptable must not be within the WDZ and/or weapon fragmentation and ricochet pattern.

4.10.7. Weapons Employment Near Manned Equipment, Facilities and Sites. In general, manned equipment, facilities and sites, such as range towers, simulated threat emitters, and observation posts (OP), may be located within the hazard area during range operations, provided training ordnance is used and an operational risk assessment was conducted and approved by the ROA IAW paragraph **4.14**. At a minimum, this will include a WDZ footprint analysis to assess the risk. The ROA must approve each proposal in writing. The ROA may delegate approval authority for short notice, temporary locations known to be in a low risk area. However, each location authorized by the delegated approver will be for one-time use only. Additional requests must be analyzed on a case-by-case basis and approved by the ROA.

4.10.8. ROAs will approve Improved-Container Delivery System (I-CDS) deliveries only if the Precision Airdrop System-Mission Planner (PADS-MP) derived 3-sigma(99.987)

footprints for success and chute failure overlay only government owned, leased or otherwise controlled land with no non-mission essential personnel present and a Collateral Damage Estimate (CDE) acceptable to the ROA has been accomplished. ROAs will approve JPADS guided deliveries only if the PADS-MP derived point of impact, the 3-sigma(99.987) footprint for chute failure and the guidance failure footprint overlay only government owned, leased or otherwise controlled land with no non-mission essential personnel present and a Collateral Damage Estimate (CDE) acceptable to the ROA has been accomplished. If the load will or may transit non-Restricted Airspace during its fall (e.g. footprints are not wholly contained within restricted airspace), ROAs will also ensure the user complies with applicable rules contained in Federal Aviation Regulation 105.25.

4.10.8.1. Equipment, facilities and mission essential personnel are permitted within the 3-sigma(99.987) success, chute failure and the guidance failure footprints if the ROA has conducted and approved an operational risk assessment IAW paragraph **4.14**. Because users utilize weather observation and drop sonde wind updates to revise their footprint analyses up until the time of delivery, ROAs should ensure the user is aware of the ROAs exclusion requirements and provided with the location of airspace/range boundaries and any personnel or equipment the ROA cannot or chooses not to allow in the footprint as part of his risk analysis.

4.11. Laser and Directed Energy Weapons (DEW) Operations.

4.11.1. Laser Device Range Operations. The ROA will not authorize laser device operations unless the range is certified IAW AFOSH Standard 48-139, *Laser Radiation Protection Program*; American National Standard Institute Z136.1, *Safe Use of Lasers*; MIL HDBK 828A, *Laser Safety on Ranges and in Other Outdoor Areas*; and American National Standard Institute Z136.6, *Safe Use of Lasers Outdoors*. Laser devices include designators, rangefinders, and illuminators/pointers.

4.11.2. DEW Range Operations. Except as noted below, the ROA will not authorize DEW operations (to include, but not limited to, high-energy lasers, weaponized microwave and millimeter wave beams, explosive-driven electromagnetic pulse devices, acoustic weapons, laser induced plasma channel systems, non-lethal directed energy devices, and atomic-scale and subatomic particle beam weapons) unless the range is certified IAW applicable instructions, including DoD Instruction 6055.11, *Protection of DoD Personnel from Exposure to Radiofrequency Radiation and Military Exempt Lasers*; ANSI/IEEE C95.1 *Standard for Safety Levels with Respect to Human Exposure to Radio Frequency Electromagnetic Fields, 3 kHz to 300 GHz*; AFOSH Std 48-9, *Radio Frequency Radiation (RFR) Safety Program*; and AFMAN 91-201, *Explosives Safety Standards*.

4.11.2.1. Research and Test and Evaluation (T&E) activities involving laser devices/DEW (RF devices) do not require range certification if conducted IAW AFI 99-103, *Test Management,* AFMCI 99-103, *Test Management,* and (if applicable) AFRLI 61-103, *AFRL Research Test Management*. Include the Base Laser Safety Officer on the Safety Review Board hazard assessment team. The SRB must show the control of the hazards from the beginning of operations commencing until termination. Hazards extending beyond restricted airspace or controlled government land must show the appropriate levels of federal and local coordination are in place. The Installation Commander is the final approval authority in lieu of formal range certification.

Additional expertise regarding Test and Evaluations can be obtained by contacting the 711th Human Performance Wing (711HPW) or the Air Force Research Laboratory (AFRL).

4.11.3. Range Certification. The ROA will request laser device range certification and/or DEW (i.e. RF device) range certification through the MAJCOM to the 711HPW/RHD. 711HPW/RHD will report certification results to the ROA, base bioenvironmental engineer, and MAJCOM. DEW evaluations will be a collaborative effort between 711HPW/RHD, AFRL/RD, and any other agency needed to ensure foreseeable health and material safety concerns are considered. Laser range evaluations will be conducted by 711HPW/RHDO in collaboration with other agencies as needed to enable safe mission accomplishment. Evaluations will include an on-site survey, a review of proposed activities (weapons, targets, and tactics) and provide range-specific laser device or DEW safety footprints, safety recommendations, and systems approved for use on that range.

4.11.4. Annual Reviews. The LSO and/or DEWSO will review applicable operations with the ROO/ROA annually and report findings as directed by AFRL.

4.11.5. Certification Validity. Certifications expire at the end of the third fiscal year following issuance (e.g. a certification dated 3 Dec 2006 expires on 31 Sep 2010). Upon expiration, the certification must be reaccomplished IAW paragraph **4.11.3**. Prior to expiration, the certification is valid for the equipment, aircraft, targets, tactics and weapons evaluated as long as the report's recommendations are complied with, land and airspace boundaries remain unchanged, annual reviews are submitted within 45 days of the initial report's anniversary and periodic removal of specular hazards for lasers meets the requirements in paragraph **4.11.6**. The reinstatement or extension of a certification will be at the discretion of AFRL based on the scope of changes.

4.11.5.1. **(Added-ANG)** An LSO (Laser Safety Officer) will be present during any operation/mission employing lasers (emitting ocular and/or skin hazard) or IR pointers.

4.11.6. Laser Device and Laser DEW Range Operations. The director of Base Medical Services will be notified of the specific type of laser activity that will occur on the range. Range personnel will have a baseline eye exam before working in the laser hazard environment. During laser operations, all range personnel in the Laser Surface Danger Zone (LSDZ) will wear laser eye protection of appropriate optical density. Periodically remove specular hazards from the LSDZ surrounding the targets; reference guidance in MIL HDBK 828A as necessary. Lasers will not be operated without the approval of the LSO and the ROO (RCO on Class A Ranges). The user will notify the ROO or RCO upon termination of laser activity. The ROO or RCO will acknowledge termination and the ROA will record the start and stop time of range periods when laser operations take place.

4.11.7. Non-Laser DEW Range Operations. Non-Laser DEW systems will not be operated without the approval of the DEWSO and the ROO (RCO on Class A Ranges). The user will notify the ROO or RCO upon termination of DEW activity which will be acknowledged. The ROA will record the start and stop time of range periods when DEW operations take place.

4.11.8. Ground Lasers. Ground lasers will not be directed at targets or Hazard Areas where the laser beam will terminate with an ocular hazard beyond the range boundary unless the

laser will exclusively transit SUA below FL600 and terminate in space without affecting non-participating satellites.

4.11.8.1. **(Added-ANG)** ANG ranges will not allow use of a single source pointer/marker/laser as the sole method to identify or mark targets.

4.11.9. Injury Reporting. Report laser injuries IAW AFOSH Standard 48-139 and radiofrequency radiation injuries IAW AFOSH Standard 48-9, *Radio Frequency Radiation (RFR) Safety Program*.

4.11.10. Laser Weapon, Device and DEW Certification on foreign and other U.S. service ranges. When USAF aircraft operate on another nation's/service's range, MAJCOMs will ensure procedures have been developed and are promulgated by the host nation/service prior to employing lasers weapons, devices and/or DEW systems. In the event procedures have not been developed, laser weapon, device and DEW operations will comply with this instruction.

4.12. Range Access. MAJCOMs and ROAs will develop procedures for permitting/deconflicting ground party and non-military activities on the range. (Note: Where the terms Essential Personnel, Mission Essential Personnel and Nonessential Personnel are used below, reference **Attachment 1** of this instruction.)

4.12.1. In addition to the signs required by AFI 31-101, *The Air Force Installation Security Program (FOUO)*, ROAs will post approved signs (multi-lingual where required and as depicted on the RMAST Wiki site or MAJCOM-approved substitutes) on the boundary:

4.12.1.1. Where crossed by roads, paths, trails, streams, streambeds or railways.

4.12.1.2. At 200m intervals where roads, paths, trails or railways parallel the range boundary within 500m.

4.12.1.3. At 1000m intervals in other readily accessible areas not included above.

4.12.2. Signs are not required in areas that are not readily accessible on foot or with wheeled vehicles (e.g. mountainous terrain, swamps, lakes, etc.).

4.12.3. Impact Areas. The Impact Area is that area on a range immediately surrounding the target(s) or designated mean point(s) of impact approved for actual ordnance delivery. Public access to Impact Areas is prohibited at all times. Access to Impact Areas when the range is inactive will be limited to Essential Personnel. The Impact Area demarcation will be determined locally using ORM analysis IAW paragraph **4.14**, but should normally be no less than either a) 500 feet from the center of a target or designated mean point of impact (DMPI) approved for live ordnance, or b) 300 feet from the center of a target or DMPI used solely for inert or practice ordnance.

4.12.4. Hazard Areas. The Hazard Area is a composite of all WDZs and surface danger zones (SDZs) for all authorized weapon delivery events against targets or DMPIs approved for actual ordnance expenditures. Public access to Hazard Areas is prohibited unless specifically authorized by the ROA. All live munitions must be accounted for in a Hazard Area or the applicable portion of a Hazard Area before public access is authorized. Access to active Hazard Areas is limited to Mission Essential Personnel. Access to inactive Hazard Areas is limited to Essential Personnel. Hazard Areas may be segmented based upon the targets, weapons, and tactics being utilized at a given time. If Hazard Areas are segmented, ROAs will ensure segment borders are readily identifiable by ground personnel. Access to

Hazard Areas will be determined locally based on an ORM analysis per paragraph **4.14**. On ranges where another agency controls Hazard Area access, the ROA will establish procedures to verify access control and inform that agency of potential hazards.

4.12.4.1. Weapons Danger Zone (WDZ). The WDZ encompasses the ground and airspace for lateral and vertical containment of a user-determined percentage of projectiles, fragments, debris, and components resulting from the firing, launching, and/or detonation of aviation delivered ordnance. This three-dimensional zone accounts for weapon accuracy, failures, ricochets, and broaches (resurfacing) of a specific weapon/munition type delivered by a specific aircraft type.

4.12.4.2. Surface Danger Zones (SDZ). The ground and airspace designated for vertical and lateral containment of a user-determined percentage of projectiles, fragments, debris, and components resulting from the firing, launching, or detonation of weapon systems to include explosives and demolitions. See the U.S. Army's Range Manager's Toolkit Software for specific SDZ information.

4.12.5. Danger Areas. The Danger Area is the composite area of the Hazard Area and all active LSDZs and active Directed Energy Weapons Danger Zones (DEWDZs). When the range is in use, access to those portions of the Danger Area comprised only of active LSDZs or active DEWDZs is limited to Mission Essential Personnel. When the range is not in use, access does not need to be restricted.

4.12.6. Observation Posts (OPs). Notwithstanding paragraphs **4.10.7** and **4.12.3** to **4.12.5**, OPs within a hazard area may be used by Tactical Air Control Parties (TACP) or other briefed personnel involved in CAS/air-to-ground training. If training requires personnel to be inside Hazard Area or Impact Area, they must remain outside the Minimum Safe Distances for Ground Parties (Live Fire Training) Table (MSD-T) contained in AFI 11-214, Attachment 6. ROAs will conduct a risk assessment of the proposed OP or maneuver area prior to the ROA approving the OP's use. All personnel will wear protective gear IAW AFI 13-112V1, *Terminal Attack Controller Training Program* while inside the hazard area. For weapons not listed in the AFI 11-214 chart, TACPs or other briefed personnel must adhere to restrictions contained in paragraphs **4.12.3** to **4.12.5**.

4.13. Range Safety.

4.13.1. Visual Identification of Manned Equipment, Facilities and Site. To the maximum extent possible, equipment and facilities, manned or unmanned, that are not targets should include visual identification systems, such as high contrast paint (white or orange), IR strobes, etc. White or orange paint will not be used on any "bombable" targets with the exception of strafe "rags" or specific test targets where white supports test objectives.

4.13.2. Range Demonstrations and Visitor Procedures. Each ROA must publish or reference procedures in their local range supplement to ensure positive control of all spectators. Visitor locations must be analyzed using the appropriate weapons footprint/hazard area program to ensure that spectators are not within the hazard area during operations. The ROA will have control in those limited cases where DoD personnel or contractors must be within the hazard area during operations to accomplish a specific mission-related task.

4.13.3. Flight Safety.

4.13.3.1. Airspace Activation. The RCO will activate range airspace with the local ATC facility or Air Traffic representative IAW local agreements between the ROA and the controlling agency. The request for activation should be timed (before a scheduled mission) to allow shared or joint users to clear the area and for the controlling agency to make internal adjustments.

4.13.3.2. Weather Observation. The RCO will monitor weather conditions to include altimeter setting, temperature, ceiling, visibility and winds. Observations may be obtained from the local base weather station, command post, Automated Weather Observing System (AWOS), or ATC agency at least hourly, if the capability is not available at the range. The local weather detachment or command post should advise the RCO of any sudden adverse weather changes that might effect range operations or safety.

4.13.3.3. Aircraft Accident Procedures. In case of an aircraft crash during Class A range operations, the RCO will initiate all necessary emergency actions. These include appropriate notifications, closing of the range, and assuming responsibility as the interim on-scene commander until the crash response team can be organized. During Class B and C range operations, the flight lead, individual pilot, FAC(A), JTAC or other briefed person will start the emergency actions, and if feasible, act as the interim on scene-commander. Investigations will be conducted IAW AFI 91-204, *Safety Investigations and Reports*.

4.13.3.3. **(ANG)** Aircraft Accident Procedures: Ranges will conduct an exercise, at a minimum annually. Document all training exercises.

4.13.3.3.1. **(Added-ANG)** The ROA will be the approving authority for resuming range operations following an aircraft accident involving range operations.

4.13.4. Ground and Explosive Safety.

4.13.4.1. Fire Suppression Equipment. On Class A and manned Class B ranges, appropriate fire suppression equipment and personnel must be available to deal with local fire hazards. This capability may be provided through USAF, landowner, in-service civilian, independent contractor assets, or through agreement with another government agency such as the BLM or US Forest Service. Sufficient hand-operated fire suppression equipment must be assigned directly to the range for emergency use.

4.13.4.1. **(ANG)** Fire Suppression Equipment: All Range personnel responsible for range fire response will be trained to the National Wildfire Coordinating Group (NWCG) Equivalent Firefighter II IAW Table 12.1, AFI 32-7064.

4.13.4.1.1. **(Added-ANG)** One responder per range will receive additional training in the following courses: S-131, Advanced Fire Fighting Training; S-133, Look Up, Look Down, Look Around and S-200, Initial Aircraft Incident Commander.

4.13.4.1.2. **(Added-ANG)** Appropriate personnel protective equipment will be maintained as defined in NFPA 1977 and includes: Helmet, Goggles, Gloves, Protective Footwear, and Flame-resistant clothing. Fire shelters may also be required, see the requirements of your State forestry.

4.13.4.1.3. **(Added-ANG)** Ranges will conduct a Wildland Fire exercise with recurring training, at a minimum annually. Fire breaks will be maintained to ensure proper fire prevention and protections.

4.13.4.2. Emergency Procedures. Emergency procedures will be readily available to the RCO for use during range operations.

4.13.4.2. **(ANG)** Emergency Procedures: These procedures will also be readily available to responding range crew.

4.13.4.3. Safety Briefing Requirements. The ROA or contractor will provide and document initial and yearly ground and explosive safety briefings IAW AFI 91-202, to personnel assigned to operate and maintain Air Force ranges. Non-EOD personnel and augmenting EOD Personnel will receive appropriate training from the lead EOD unit (normally the associate EOD unit) before assisting in range clearance. Authorized visitors and personnel who infrequently visit the range must be briefed on range safety.

4.13.4.4. Hazard Condition Watch. The RCO and all range personnel must continually watch for hazardous conditions such as trespassers, fires, bird activity conditions, etc. Range users will be notified immediately of any hazardous conditions on the range. If safety is in question, the RCO or other appropriate authority will stop range operations until the situation is remedied.

4.13.5. **(Added-ANG)** Depleted Uranium (DU) (add to attach 1) and Cluster Bomb Units (CBU) are not authorized for use on any ANG range.

4.14. Operational Risk Management (ORM) Program. ROAs will implement an ORM program for the range IAW AFPAM 90-902, *Operational Risk Management (ORM) Guidelines and Tools*. As a minimum, the ORM development team will consist of operations, civil engineering, legal, public affairs, safety, and EOD. The ORM analysis examines geographic features, frequency of EOD sweeps, type of ordnance authorized, employment tactics, type of proposed joint or shared use, etc.

4.15. Night Operations.

4.15.1. Aircraft reduced, covert and blacked-out lighting operations will not be conducted on Class A ranges unless the RCO is equipped with binocular, generation-III NVDs. NVDs will be tested, adjusted and focused by the RCO before use with (in order of preference) the Hoffman ANV-20/20 Tester, a unit eye lane or equivalent tester. Perform NVD testing, adjustment and focusing procedures IAW appropriate T.O.s and MAJCOM guidance.

4.15.1.1. **(Added-ANG)** If the RCO cannot positively determine that aircraft parameters exist for safe ordnance release, the RCO may delegate release authority. The RCO still retains responsibility for range safety.

4.15.1.2. **(Added-ANG)** The Night Vision Goggle CBT program is available through NGB/A3A to assist in NVD training requirement.

4.15.2. Range Lighting.

4.15.2.1. Class A Range Identification Lighting. Class A ranges that support night operations must have available a distinctive pattern of lights visible by aircrews, with and without NVDs, to ensure positive orientation and identification of the range and target

area. These lights should be readily identifiable but not so as to distract aircrews during weapons delivery or wash out target locations. ROAs will ensure that no similar pattern of lights exists near the range that could be misidentified as targets or the Impact Area, but cultural lighting inside or outside the range boundary may serve as a portion of the distinctive pattern of lights.

4.15.2.2. Class B Range Identification Lighting. Class B ranges that support night operations will have lighting as described above unless the ROA has determined that the lighting is not required based on a documented, ORM analysis (based on range size, remoteness, etc.)

4.15.2.3. Target Lighting. Lighting for the specific purpose of illuminating the target is only required on ranges that support users accomplishing unaided visual deliveries. If required (or desired by other users), target lighting may be accomplished using incandescent lights, lanterns, or flares. Lights and lanterns should be NVD compatible or reduced in intensity to produce the minimum halo around each light when viewed through NVDs. Every effort should be made to prevent the target from appearing as a light with a halo to allow positive target identification.

4.15.2.4. Range Facility Identification.

4.15.2.4.1. Range Tower and Routinely-Manned Facility Lighting. Lighting is required on all routinely-manned range facilities and range towers to facilitate positive identification by aircrew. Proper management of tower lighting is important to maximize performance of NVDs used by range personnel. Tower lighting (interior and exterior) should be minimized to those necessary to conduct operations and all unnecessary lights should be extinguished or taped over. NVD compatible lighting is highly recommended. Consider moving tower, routinely-manned facility and obstruction strobe lights to locations that will best support night operations.

4.15.2.4.2. Other Manned Locations. Other manned locations (such as OPs, visitor locations, vehicles, etc.) will, as a minimum, mark their location by any means described in JP 3-09.3 for "friendly marking" that facilitates positive identification by aircrew.

4.15.2.4.3. **(Added-ANG)** ANG target lighting will be a steady (not flashing, strobe, etc.) style light. Manned sights will be marked with flashing and/or strobe lights. Range boundaries, if marked, will also be marked with flashing or strobe lights.

4.15.3. IR Pointers and/or Lasers. A single, steady IR pointer will not be used as the sole means of target identification. If using an IR pointer to mark targets, either the target or friendly terminus of the pointer must be positively verified by another means (snaking, friendly location marking, etc.). Do not lase unprotected personnel within the laser's Nominal Ocular Hazard Distance (NOHD). When ground based lasers/designators are used to designate targets, attack headings within 10° of the laser designator to target line (safety zone) are prohibited and run-in headings are restricted to a 50° cone on either side of the safety zone.

4.16. Communications Requirements. The ROA will submit all normal communications capability requirements to the Base-Level Systems Telecommunications Engineering Manager (STEM-B) for system planning. Consult AFI 33-101, *Communications and Information*

Management Guidance and Responsibilities for planning guidance. Test-specific systems on MRTFBs may be obtained by local acquisition methods.

4.16.1. Class A, B and C ranges will have reliable point-to-point communications with the parent or using base and manned sites on the range. On Class A ranges, the range control tower will have redundant communications capability with the flank tower(s) and operations building(s). All parties or individuals must maintain two-way voice contact with the main tower, range office, and/or parent base while in the Hazard Area. Portable or mobile radios may be used for backup communications and to maintain contact with personnel in the Hazard Area.

4.16.2. Class A, B and C ranges will have ground-to-air radios to communicate with aircraft on the range. Primary systems will normally be ultra high frequency (UHF) radios, but very high frequency (VHF), or frequency modulation (FM) radios are authorized at ranges where all users are similarly equipped. On Class A ranges, the RCO will have a backup, independent radio. Provision of dual, multi-band radios should be considered to maximize mission flexibility and safety monitoring capability. Class B ranges, if staffed, must have the capability to communicate with the aircraft to provide scores.

4.16.2.1. All UHF, VHF, FM and Land Mobile Radios (LMR) voice frequencies being used on range will be recorded at all times.

4.16.2.2. The RCO will ensure that all recorders are working properly. Each recording will contain the range name, date, and time. Recordings containing records of any range incident will be kept and secured until released by the investigating agency.

4.16.2.3. All aircraft utilizing the range will monitor Guard frequency.

4.16.2.4. Aircraft using UHF, VHF, or FM radios on the range will utilize range assigned UHF, VHF, or FM frequencies for primary operations.

4.16.2.5. **(Added-ANG)** Range Control Officers will monitor Guard Frequency and will transmit on UHF/VHF guard frequencies as appropriate.

4.16.3. Communication Operations. Range personnel will normally operate all communications equipment used on range. Assign communications personnel as radio operators only when special conditions warrant.

4.16.4. Intra-flight communications. All intra-flight communications should be accomplished on the assigned range frequency using standard terminology to allow safety monitoring by the RCO.

4.17. Range Operations Support.

4.17.1. Supply. The ROA should establish procedures with the parent or servicing base supply organization to obtain materials for range operations, as well as salvage and disposal. When required, establish a separate supply section at the range to administer all supply activities.

4.17.2. Vehicles. Use of Government Furnished Equipment (GFE) vehicles in contract operations should be kept to a minimum per AFI 24-301, and Federal Acquisition Regulation (FAR) Part 45 § 304, *Providing Motor Vehicles*.

4.17.3. Utilities. The ROA will ensure ranges are provided the utilities (gas, water, electric and sewer) required to enable range operations. Commercially provided services should be used when available, suitable and cost-effective.

4.17.4. **(Added-ANG)** ANG Ranges support both day and night operations and weekend operations to meet using unit training requirements.

4.17.5. **(Added-ANG)** Some ranges, which are geographically separated from their host unit, must complete range vehicle and equipment maintenance functions.

4.17.6. **(Added-ANG)** All ranges will maintain emergency generators sufficient to operate all utilities required for flight operations in the event of commercial power outage.

4.18. (Added-ANG) Unmanned Aircraft System Operations.

4.18.1. **(Added-ANG)** RCOs shall ensure briefings are conducted to include lost link procedures, lost communication procedures, use of UA Zones and UA Operating Areas.

4.18.2. **(Added-ANG)** RCO qualifications for use of Class 1,2 and 3 unarmed UAS incapable of delivering ordnance, firing lasers or engaging in hazardous activity will be IAW AFI 13-212 para 2.5.29.

4.19. (Added-ANG) UAS Procedures. The following procedures will be applied at all ANG managed ranges. Local procedures will at a minimum address the areas below and be developed using the following guidance:

4.19.1. **(Added-ANG)** All UA pilots/operators will comply with RCO instructions.

4.19.2. **(Added-ANG)** Deconfliction of UA and other manned traffic will be accomplished by use of altitude restrictions, visual holding points with specific lateral and vertical limits, use of ground observers or other locally determined procedures.

4.19.3. **(Added-ANG)** The UA mission commander/operator shall advise RCO of initiation and completion of flight operations.

4.19.4. **(Added-ANG)** Radio check between UA pilot/operator and RCO will be conducted prior to operations.

4.19.5. **(Added-ANG)** UA pilot/operators will report all in-flight emergencies to the RCO as soon as possible.

4.19.5.1. **(Added-ANG)** If primary radio communications between the UA pilot/operator and RCO are lost, UA pilot/operator or RCO will be notified immediately via designated alternate communications method. Failure to establish or maintain radio communications between UA pilot/operator and RCO will require termination of UA operations.

Chapter 5

ELECTRONIC COMBAT TRAINING OPERATIONS

5.1. Electronic Combat Training Operations. Electronic Combat (EC) Training Operations facilities provide a realistic electronic threat environment for aircrew training through the use of Surface-to-Air Missile (SAM) and Anti-Aircraft Artillery (AAA) threat emitter simulators. These facilities also provide Electronic Combat support for composite force training, unit exercises, unit gunnery competitions, normal training missions, and higher HQ exercises or inspections. To fulfill these requirements, EC threat equipment and operating procedures must closely parallel those of the anticipated enemy threat systems.

5.1.1. Electronic Scoring Sites (ESS). ESSs are normally located near instrumented MTRs, MOAs, and/or Air Traffic Control Assigned Airspace (ATCAA) and only require a small land area for equipment location. An ESS has the capability to provide mission debriefings detailing individual aircrew or large force analysis/feedback on the effectiveness of ECM and threat avoidance procedures.

5.1.2. Electronic Combat Ranges (ECRs) are collocated with ranges or in close proximity to MOAs, MTRs, and other SUA. All ECRs have the capability to provide analysis/feedback on the effectiveness of package or individual aircrew ECM and/or threat avoidance procedures. ECRs provide a limited or robust EC training capability and consist of multiple geographically separated threat emitters coordinated to simulate an Integrated Air Defense System (IADS). Mobile emitters are used to provide scenario flexibility.

5.1.3. EC Personnel Training. To provide a realistic threat environment for aircrew combat training, ECR/ESS electronic threat operators will have a working knowledge of EC doctrine and employment concepts.

5.1.3.1. Training Programs. Management criteria, administrative practices, and training policies required to conduct a comprehensive ECR/ESS training program will include academics and practical application in live and simulated environments. ECR/ESS personnel should be familiar with applicable MAJCOM training events and requirements defined in AFI 11-2MDSv1s and Ready Aircrew Program (RAP) Tasking Messages.

5.1.3.1. **(ANG)** ANG Ranges will provide basic to advanced electronic threats as required by units in accordance with range capabilities.

5.1.3.2. Responsibilities. ROAs are responsible for the selection and written designation of instructor personnel who will conduct site training for government personnel. The unit training officer/site manager is responsible for developing the unit training programs, training schedules, quarterly and annual unit training plans, and lesson plans, and is the unit approving authority for all unit-developed training courses or programs. For contractor run operations, the contract must specify the minimum training requirements.

5.2. Electronic Combat Equipment Management. EC range equipment consists of SAM and AAA emitter/simulators, Smokey SAM training rockets and associated EC threat systems (See **Attachment 1** for emitter/simulator definition). Reference the RMAST Wiki website for special equipment and systems used to simulate enemy threats, or AFI 99-109 for threat system configuration management under test auspices as a MRTFB.

5.2.1. Requests for Threat System Additions, Reallocation or Modification. IAW AFI 10-901, *Lead Operating Command--Communications and Information Systems Management*, HQ ACC is the designated lead command for all requests for new/additional range threat emitters, simulators, and systems. Development of new threats systems will be approved by the CTR Executive Review. The affected MAJCOMs will mutually agree upon requests for reallocation of threat systems and AF/A3O-AR will arbitrate any disputes. See AFI 99-109 for test procedures.

5.2.1. **(ANG)** NGB/A3A is the validating agency for new or additional threat systems for ANG range inventory. The originating ROA will validate the requirement with NGB/A3A. The request must include the number and type system required, mission requirements, frequency authorizations and confirmation of maintenance facility, funding and personnel to adequately support the requested system.

5.2.2. Requests for Disposition of Equipment. No emitter/simulator will be deactivated, transferred, or decommissioned without MAJCOM approval. All deactivation/decommission and final disposition requests will be approved by the parent MAJCOM and HQ ACC with AF/A3O-AR arbitrating any disputes.

5.2.2. **(ANG)** NGB/A3A is the approval authority for deactivating or decommissioning any ANG electronic threat asset. NGB/A3A will provide disposition instructions for all ANG electronic threat equipment.

5.2.3. Equipment Inventory and Configuration Control. HQ ACC/A3A will develop and maintain a system that accurately inventories, tracks equipment, and documents the configuration of threat emitters and simulators.

5.3. Radio Frequency Spectrum Issues. ROAs will identify the frequency spectrum required for range operation and coordinate requirements with the appropriate Installation Spectrum Manager. The ROA will ensure that a frequency assignment has been obtained prior to using any RF emitting equipment.

5.4. Electronic Warfare (EW) Product Improvement Working Group (PIWG). The EW PIWG is co-chaired by the Range Threat Systems Program Office (SPO), ACC/A3AR, and ACC/A6OF IAW AFI 21-118, *Improving Air and Space Equipment Reliability and Maintainability (R&M)*. The primary goals are to interact with and receive feedback from equipment users, jointly establish priorities for future efforts, develop solutions to R&M problems, and provide updates concerning on-going efforts.

5.5. Electronic Scoring Site / Electronic Combat Range Activity. ROAs will make every effort to provide scores/feedback for requested EC activity. These shall be documented and delivered in a mutually agreed upon format.

Chapter 6

TRACKING AND REPORTING REQUIREMENTS

6.1. Reporting Requirements. AF/A3O-AR in conjunction with the MAJCOMs will develop and maintain an AF range utilization database to track range use, as well as usage data on electronic threat, scoring, and instrumentation feedback systems.

6.1. (ANG)Reporting Requirements. ANG ranges will submit monthly utilization reports no later than 10 workdays following the reporting period IAW the format and procedures established by NGB/A3A.

6.1.1. Classified Data. If required, submit classified information separately from unclassified data.

6.2. Range Utilization Reporting. Utilization reporting requirements will be directed by periodic publishing of a "Range Utilization Tasking Memo" which can be obtained from the library on the USAF RMAST website.

6.3. Expended Munitions Tracking. IAW Title 40 CFR, §266, *Military Munitions*, DoDD 4715.11, *Environmental and Explosives Safety Management on Operational Ranges Within the United States*, and DoDD 4715.12, ROAs will maintain records of all expenditures (types, quantities, locations, using organization, and estimated dud rates) of ammunition and explosives for each target. ROAs will maintain those records as required by AFMAN 33-363.

6.4. Range Clearance Report. This report is a detailed report of clearance events and will precisely identify the areas that have been cleared and include the number of people and the amount of money and material used to accomplish the work. When closing or transferring ranges the range clearance report will be attached to the Certificate of Clearance which becomes an official document certifying that all dangerous and explosive materials reasonably possible to detect have been removed.

6.5. RAMPOD Configuration Management System. System inventory, configuration and operational status accounting, utilization, and maintenance data collection are accomplished using the Reliability, Availability, Maintainability Logistics Engineering Support System for Pods (RAMPOD) which can be accessed at **https://rampod4.robins.af.mil/**. The RAMPOD (G100) data collection system is a PC-compatible, database system that is used to track asset location, movement (deployment), configuration, utilization, and maintenance status. Field units/contractors are required to update the database system to reflect any changes in location, configuration, or maintenance status of ACTS equipment and associated support equipment (automated test sets, containers, etc). This system provides visibility into the disposition and configuration of these assets to all levels of command. AFMC and ACC (CAF Lead Command) provide cooperative insight/oversight for the data management system. The RAMPOD system policies and procedures apply to CAF, AETC, AFRC, and ANG units utilizing ACTS pods.

6.5.1. Purpose. RAMPOD provides a viable means to collect and report the necessary data to maximize ACTS mission capability and sortie effectiveness, reduce the cost of ownership, manage system configuration inventory, and compile reliability and maintainability factors to support ongoing product support and improvement initiatives. RAMPOD provides regularly

updated and verified inventory, status, and maintenance data for users at all levels of the Air Force community.

6.5.2. Responsibilities. RAMPOD receives funding through its own PMD and PE 27040F. Direction for implementation of RAMPOD is provided in AFI 21-101, *Aircraft and Equipment Maintenance Management* and AFI 21-103, *Equipment Inventory, Status and Utilization Reporting*. MAJCOMs will provide direction to field units by establishing procedures and contractual vehicles to ensure data is submitted to RAMPOD as required. WR-ALC/ITM will collect maintenance data for Reliability and Maintainability (R&M), warranties, and other information as deemed necessary to function as the system of record for Air Force pods.

6.5.3. Policy. ACC/A3A will work day-to-day issues and any additional changes to approved plans for asset transfer. AF/A3O-AR will arbitrate any unresolved differences. Under no circumstances will units move system equipment either on a temporary or permanent basis without documentation in the RAMPOD and appropriate resource management system.

6.5.4. Temporary Transfer. Units may coordinate temporary (no transfer of ownership) inter-unit equipment loans (lateral support) to fulfill contingency requirements. Temporary loans will be annotated by the lending unit in the RAMPOD database NLT the date of transfer and all transfers will include projected return dates. Shipping costs will be the responsibility of the gaining unit. Pods will be returned in the same maintenance status as they were received.

6.5.5. Permanent Transfer. Units requesting additional system equipment or related support equipment to fulfill mission requirements on a permanent basis (transfer of ownership) will attempt to resolve these requests inter-MAJCOM. The coordinated request will be forwarded to ACC/A3A. Shipping costs will be the responsibility of the gaining unit. Additionally, the CTR Executive Review members will coordinate with ACC/A3A, who will provide final distribution plans for new production pods/test-sets to AAC/YBR.

6.5.6. New Requirements. Unfulfilled requirements will be forwarded to ACC/A3A through Realistic Training Review Board (RTRB) or CTR using AF Form 1067, *Modification Proposal*.

Chapter 7

RANGE MAINTENANCE AND CLEARANCE OPERATIONS

7.1. Range Maintenance. Ranges will be constructed and maintained in compliance with AF/A3O-AR approved range construction and maintenance methods as described on the RMAST wiki site which will be periodically updated with best practices and field inputs.

7.1. (ANG)Range Maintenance. ROAs will submit exemptions IAW **paragraph 1.5** to the clearance criteria for areas that cannot be cleared due to accessibility or other conditions.

7.2. Range Clearance. Each MAJCOM/ROA is responsible for the clearance of operational ranges under its control IAW DoDI 3200.16, *Operational Range Clearance*, DoDI 4140.62, *Management and Disposition of Material Potentially Presenting an Explosive Hazard (MPPEH)*, and Title 40 CFR, Parts 260-270. Furthermore, each MAJCOM/ROA must dispose of radioactive wastes IAW the Air Force Radioactive and Mixed Waste Office (AFRMWO) and AFI 40-201, *Managing Radioactive Materials in the US Air Force*.

7.2.1. Funding and Scheduling Range Clearances. The ROA is responsible for funding and scheduling all MPPEH/range clearance, and should include clearance activities in the CRP. The ROA should publish a clearance schedule on the range web page IAW paragraph **2.5.13**. The ROA or ROO may temporarily postpone range clearance on a case-by-case basis for severe weather or other unforeseen circumstances that warrant delays.

7.2.2. EOD Support for Range Clearances. When the requirement for range clearance support exceeds the capability of the associated EOD unit, shortfalls are managed within the ACES Range Support Tasking (RST) program.

7.2.2.1. Development of the annual range clearance plan will be a collaborative effort between the ROA and the associate EOD unit (or MAJCOM) finalized at least six months prior to the first clearance activity. The associate EOD unit (or MAJCOM) will enter RST requests into ACES as required to meet clearance requirements.

7.2.2.2. Finalize all ROA range scheduling and EOD RST support at least 45 days before the start of the clearance operation.

7.3. Range Clearance Operations. Range clearance includes the removal or disposal of all ordnance, inert ordnance debris, Training Projectile (TP) ammunition, and other range debris reasonably possible to detect (normally down to four inches in size).

7.3.1. Ordnance Removal and Disposal. Normally, only EOD Personnel will perform explosive operations (detonation/energetic material destruction). When a fully coordinated waiver or exemption has been approved by AF/A3O-AR, UXO-Qualified Personnel may perform limited explosives operations (venting or disposing of practice bombs) in areas of ranges that have never been used for live munitions. (Reference **Attachment 1** for EOD Personnel and UXO-Qualified Personnel definitions).

7.3.1.1. ***Warning:*** Except for training gun ammunition on targets designated solely for that use, and expended Smokey Sam missile simulators, non-EOD Personnel will not move or attempt to move munitions unless they have been marked “safe to move” by EOD Personnel or UXO-Qualified Personnel.

7.3.1.2. ***Warning:*** Non-EOD Personnel will not remove, move or process a used target until is has been marked "safe to move" by EOD Personnel following thorough inspection to ensure that no UXO is present in target debris.

7.3.1.3. ***Warning:*** Range clearance operations are prohibited when snow covers the ground. However, if specifically authorized in the MAJCOM supplement, range maintenance (placement of new targets, target maintenance, removal, and replacement) may be authorized during these periods.

7.3.2. Other trained persons who are not classifiable as EOD Personnel or UXO-Qualified Personnel will only remove safe or inert ordnance debris, TP ammunition, and other range material that have been inspected and marked for removal by EOD personnel or UXO-Qualified Personnel. These other trained persons will be supervised by either EOD Personnel or UXO-Qualified personnel to ensure hazardous items are not inadvertently moved or removed.

7.3.3. MPPEH Processing. MPPEH processing (also known as "Range Residue Removal" [R3]) is normally accomplished by UXO-qualified contractors. Bases must institutionalize a chain of custody process for MPPEH from collection to final disposition. This is particularly necessary when two or more agencies (e.g., military and contracted) are involved in the MPPEH process.

7.3.3.1. EOD Personnel will brief non-EOD personnel augmenting range clearance on the possible hazards and the safe handling of debris. EOD Personnel or UXO-Qualified Personnel will inspect ordnance debris. Debris will be double-inspected or subjected to a mechanized process to ensure MPPEH is not released to the public.

7.3.3.2. To prevent co-mingling, segregate processed and inspected MPPEH awaiting disposal from MPPEH awaiting processing and inspection. Segregation may be accomplished by any means that ensures physical separation and controlled access (e.g., bins, buildings, or fenced compounds under lock and key).

7.3.3.3. Disposal of MPPEH may be accomplished by any means consistent with DoDI 4140.62 and may be accomplished by the Defense Reutilization and Marketing Service (DRMS) under a MOA or through direct commercial sales or contracts.

7.3.3.4. MPPEH disposal should not be viewed as a funds generating activity. Management and disposal of MPPEH must consider safety first. Additionally, AFI 32-7080, *Pollution Prevention Program*, excludes "ships, planes, or weapons that must undergo demilitarization or mutilation before sale" from being sold through a qualified recycling program. The proceeds from their sale SHALL NOT be returned to a qualified recycling program.

7.3.4. To identify, safeguard, and dispose of UXO, MAJCOMs will ensure that all ROAs accomplish the following:

7.3.4.1. Safely clear UXO from ranges consistent with the stated mission of the installation and for the continuing viability of the range. If there is no organic EOD capability, establish a policy agreement document for range clearance support with the nearest EOD unit. Resolve all conflicts between explosive safety and other requirements with the objective of minimizing explosive hazards. Controlled burning will not be used

to accomplish UXO clearance, but may be used to support UXO clearance if environmental and safety requirements are met.

7.3.4.2. Prepare a plan for range clearance operations that at a minimum considers the number of personnel involved, types of ordnance anticipated to be encountered and/or recovered, support requirements, expected levels of contamination. Range clearance plan will be coordinated with the supporting EOD unit.

7.3.4.2.1. ROAs should consider requesting an advanced echelon (ADVON) element from the supporting EOD unit to conduct a GPS mapping survey of UXO locations and debris-densities/distances around the targets at least two weeks prior to arrival of the main body to economize and finalize clearance planning.

7.3.4.3. Respond promptly to protect personnel and property from any UXO located off a military installation IAW AFI 32-3001.

7.3.4.4. Notify installation personnel and the public, as appropriate, if any range operation presents a potential explosive hazard off the range. This includes informing the public of any mishap that could influence the local community and may require additional precautions and/or restrictions.

7.3.4.5. Respond immediately to releases or substantial threats of release of hazardous UXO constituents, when such release or threat of release poses an imminent and substantial threat to human health or the environment IAW DoD Response authorities under Title 10 U.S.C. § 2701, *Environmental Restoration Program* and Title 42 U.S.C. § 9604, *Response Authorities*.

7.3.4.6. On operational ranges, the procedures for evaluating and responding to explosives safety, human health, and environmental risks will be IAW Title 40 CFR Parts 260-270.

7.3.4.7. Conduct cluster munitions release on designated Impact Areas only and make all reasonable attempts to employ inert and live cluster munitions on different targets.

7.3.4.7. **(ANG)** ANG Ranges will not permit Cluster Munitions or DU munitions.

7.3.4.8. To the maximum extent practicable, designate separate Impact Areas for live and inert ordnance training.

7.3.4.9. IAW AFMAN 33-363, maintain records of:

7.3.4.9.1. All expenditures (types, quantities, locations, using organization, and estimated dud rates) per target of ammunition and explosives IAW DoDD 4715.11.

7.3.4.9.2. All mishaps attributed to UXO that occur on or off the installation IAW DoDI 6055.7, *Accident Investigation, Reporting, and Recordkeeping*.

7.3.4.9.3. All EOD incidents or range clearance operations conducted on ranges.

7.3.4.9.4. All areas known or suspected to contain UXOs using range maps and/or installation master planning maps. Conduct historical research as necessary.

7.3.4.10. Remove all munitions debris from targets awaiting disposal.

7.4. Range Clearance Types and Requirements. On active ranges programmed for continued use, clear the surface of all UXO, MPPEH, and inert debris as described below.

7.4.1. The following general rules apply to all clearance activities:

7.4.1.1. Mechanized gathering procedures coordinated with the associated EOD unit and approved by the Air Force Safety Center (HQ AFSC) may be used to clear sub-scale practice munitions (e.g. BDU-33) as long as un-probed munitions are only handled by EOD Personnel or UXO-Qualified Personnel.

7.4.1.2. Only perform subsurface UXO and MPPEH removal as required in current or former Hazard Areas for construction, cable burial, etc. Report subsurface MPPEH removal and range clearance separately.

7.4.1.3. Ranges adjacent to the land of another service that prohibits clearance activities will be exempt from clearance requirements on those portions when the other service provides written acknowledgement of the ramifications. These areas will be considered "Extremely Hazardous Contaminated Impact Areas" and handled accordingly by the ROA.

7.4.1.4. ROAs will receive authorization from adjacent facilities prior to decontaminating/clearing adjacent impact areas. ROAs will document all access denials for clearance activities and report occurrences to the parent MAJCOM and AF/A3O-AR.

7.4.1.5. Hazard Areas used specifically for live munitions containing extremely hazardous fuzing (influence, random-delay, etc.) will be identified as "Extremely Hazardous Contaminated Hazard Areas." Range clearance requirements of "Extremely Hazardous Contaminated Hazard Areas" will be based on an Environmental, Safety, and Occupational Health (ESOH) risk assessment, and if warranted, a waiver or exemption request will be accomplished IAW paragraph **1.5** and staffed through the appropriate USAF ESOH agencies.

7.4.2. Low-Angle Strafe Targets. If used for low-angle strafe by aircraft that fly past or over the target within 500 feet of the target (slant range), hand-police daily if utilized and clear IAW approved range maintenance methods after 15,000 scored rounds (or twelve use-days for non-scored targets).

7.4.2. **(ANG)** Approved maintenance will include disk harrow, chisel plow, digger-strainer or magnetic sweeper. Disk harrow or chisel plow the area to keep the soil in a loose condition to the 12" depth. The decision to disk harrow, chisel plow, digger- strainer or magnet sweeper will be made by the ROA after considering such factors as the type of soil, condition of the soil in the strafe target area and its moisture content. In addition to the weekly maintenance, the following maintenance will be accomplished on the strafe target area before the first mission of the day. The area 23 meters (75') in front of the target to 30 meters (100') behind the target including 15 meters (50') either side of the centerline, and the areas around the berms and tops of the berms will be hand-policed. All hard objects 3"x2" or larger, spent projectiles and other hazardous debris will be removed. Document all strafe target maintenance.

7.4.3. Improved Conventional Munition (ICM) targets (e.g. CBU grids) are normally cleared after accumulating a specific number of weapons. The maximum accumulation amount for

ICM targets will be specified in the Range CRP and for approval by the MAJCOM with the concurrence of AF/A7C. After the maximum accumulation amount is achieved, clear ICM targets to the radius where the debris density factor is less than five items per acre and at least 500 feet from the target.

7.4.4. Range Clearance Requirements. The sub-paragraphs below define minimum clearance requirements; ROAs should consider conducting clearances more frequently or to greater radii if required to maintain targets or realistic appearance if EOD support is available. During periods of high operations tempo, ROAs should coordinate with their associated EOD unit or MAJCOM to synchronize scheduling with AEF deployment cycles.

7.4.4. **(ANG)** Ranges that are co-located on other services' land may need to submit a waiver and will do so IAW this publication.

7.4.4.1. As required: Class A, B, and C and MRTFBs. No later than 12 months since last accomplished, or when targets are emplaced, replaced or relocated, clear the access ways to the target and the area 50 feet on either side of primary target access roads (only those roads noted on installation maps and those used for sole access to targets/arrays).

7.4.4.2. Semi-Annual: Class A and MRTFBs (Except ANG, Edwards AFB, Eglin AFB and Pacific Alaskan Range Complex [PARC]). Clear the area around each DMPI associated with a target used for weapons expenditure to a radius of 150 feet either a) after six months or 150 Use-Days, whichever occurs later, or b) after 20,000 weapons have been expended against it. (Note: If two years elapse before the accumulation of 20,000 weapons, the Semi-Annual requirement is negated by the Biennial requirement in paragraph **7.4.4.3** below.)

7.4.4.3. Biennial: Class A, B, C and MRTFBs. No later than two years since last accomplished, clear the area around a target used for weapons expenditure as follows:

7.4.4.3.1. Clear targets not used for live munitions to either a) a radius of 300 feet or b) the shorter radius where the debris density factor is less than five items per acre.

7.4.4.3.2. Clear live munitions targets to either a) a radius of 500 feet or b) the shorter radius where the debris density factor is less than five items per acre.

7.4.4.4. Decennial: Class A, B, and C. No later than 10 years since last accomplished, clear the area around a target used for weapons expenditure to either a) a radius of 1,000 feet or b) the shorter radius where the density of debris items is less than five per acre. ROAs may elect to clear all areas within 1,000 feet of targets every ten years and may do so incrementally (e.g. 20% of the required area biennially for ten years).

7.4.5. **(Added-ANG)** At the conclusion of each range clearance, a chain of custody will be established for all residue inspected by EOD/UXO personnel. The residue will be secured in the Residue Holding Area until released for processing.

7.5. Range Maintenance and Clearance Safety.

7.5.1. ***Warning:*** Except for training gun ammunition on targets designated solely for that use, and expended Smokey Sam missile simulators, non-EOD Personnel will not move or attempt to move munitions unless they have been marked "safe to move" by EOD Personnel or UXO-Qualified Personnel. "Safe to move" may be indicated by any readily distinguishable means that is mutually agreeable to EOD and the ROA.

7.5.1.1. All personnel engaged in range operations must receive ground and explosive safety briefings.

7.5.1.2. Augmenting EOD Personnel must receive orientation on range vehicle operation, ordnance expected to be encountered, emergency procedures, and local range safety briefings.

7.5.1.3. Brief non-EOD personnel assisting in range clearance IAW AFMAN 91-201, *Explosive Safety Standards*, to include the markings used for practice and inert ordnance and the hazards they may encounter.

7.5.2. ***Warning:*** Range clearance operations are prohibited when snow covers the ground. However, if specifically authorized in the MAJCOM supplement, range maintenance (placement of new targets, target maintenance, removal, and replacement) may be authorized during these periods.

7.5.2. **(ANG) WARNING**: ANG Ranges are authorized to perform range maintenance (placement of new targets, target maintenance, removal and replacement) when snow covers the ground following a risk assessment of operation and acceptance of risk by appropriate level.

7.5.3. Safety Training. Exercise extreme caution when working within Hazard Areas to preclude inadvertent detonation of UXO. ROAs and EOD will ensure the following safety training/briefings are provided.

7.5.3.1. All personnel engaged in range operations must receive ground and explosive safety briefings.

7.5.3.2. Augmenting EOD Personnel must receive orientation on range vehicle operation, ordnance expected to be encountered, emergency procedures, and local range safety briefings.

7.5.3.3. Brief non-EOD personnel assisting in range clearance IAW AFMAN 91-201, *Explosive Safety Standards*, to include the markings used for practice and inert ordnance and the hazards they may encounter.

7.5.4. In addition to **Chapter 4** communications requirements, each working team must have a signaling device for use in the event an uninformed flight crew attempts to use the range.

7.5.5. All contractor personnel must adhere to OSHA and/or DoD 4145.26-M, *DoD Contractors' Safety Manual for Ammunition and Explosives*, as applicable.

7.6. Range Operations during Range Maintenance and Clearance. Unless further restricted by MAJCOM or local range supplements, during maintenance and range clearance adhere to the additional restrictions below.

7.6.1. Class A Range Operations. Range maintenance and clearance operations can be conducted on one side of a dual Class A range (except behind strafe targets) while the RCO is controlling aircrew training missions on the other side of the range.

7.6.2. Class B and C Range Operations. Class B and C ranges are normally closed during maintenance and clearance operations, but if the range is of sufficient size the ROA may authorize continued operations on portions of the range (and adjacent ranges) with the approval of the EOD team chief. If approved, the ROA will brief aircrews concerning the

location of ground personnel and emphasize the absolute need for certain target identification.

7.6.3. Over flight Procedures. Over flight is not authorized without the concurrence of the ground party and RCO/ROO approval over areas or portions of ranges during maintenance and clearance operations. This ensures the protection of ground personnel and prevents aircraft damage by fragments from explosives operations. Strict adherence to the procedures outlined below is mandatory.

7.6.3.1. When range maintenance or clearance personnel are present on the range and explosives operations are not planned, aircraft will remain at or above 3,000' AGL unless a lower altitude is specifically approved by the ground party and RCO or ROO.

7.6.3.2. When explosives operations are planned, aircraft will remain at or above 7,000' AGL to ensure containment of H-6 fill Mk-84 fragmentation.

7.6.3.3. When no personnel are on the range, but the range is closed for maintenance or clearance operations, aircraft operations may proceed with no additional altitude restrictions, but only simulated weapons deliveries IAW applicable directives, and eye safe laser operations are authorized during range maintenance and range clearance closures. All restrictions will be clearly identified in the range schedule and reinforced by range NOTAMS.

7.6.3.4. Chaff and flares are prohibited below 5,000' AGL above range clearance operations.

7.6.3.5. Do not conduct supersonic flight below 10,000' MSL over or within 5NM of EOD operations.

Chapter 8

TEST AND TRAINING USE OF DEPLETED URANIUM

8.1. Policy and Procedures for Use of Depleted Uranium. This instruction establishes policy and procedures for the use of Depleted Uranium (DU) by Air Force units. Test and training operations involving DU will be IAW this instruction, AFI 40-201, and the applicable USAF Radioactive Material Permit issued under the authority of USAF Master Materials License by the Air Force Medical Operations Agency's (AFMOA) Radioisotope Committee (RIC).

8.2. Responsibilities.

8.2.1. HQ USAF. The Air Staff provides policy and operational oversight of the use of DU. Approval authority for the use of DU rests with AF/A3/5.

8.2.2. Air Force Medical Operations Agency (AFMOA). The RIC (AFMOA/SGOR) provides regulatory oversight of all radioactive material used in the Air Force, other than those classified as falling under Section 91(b) of the Atomic Energy Act (AEA) [see 42 U.S.C. § 2121].

8.2.3. Unit Commanders. Ensure that only authorized DU activities are conducted, establish programs to ensure activities are accomplished safely and in compliance with requirements, and identify resources needed to comply with this instruction. Appoint an Installation Radiation Safety Officer with the authorities and responsibilities identified in AFI 40-201.

8.2.4. Personnel handling Depleted Uranium. Individual users are responsible for effective control of DU by:

8.2.4.1. Complying with radiation safety procedures outlined in the license or permit authorizing the storage or use of DU, the referenced directives, local operating instructions or directives, and verbal instructions of their Radiation Safety Officer and supervisor.

8.2.4.2. Stopping any imminent danger situation immediately, placing the operation in a safe configuration, and informing their Radiation Safety Officer or supervisor of unsafe or non-compliant radiological conditions and incidents or accidents involving DU.

8.3. Authorized Locations. The use of DU is restricted to sole use Impact Areas licensed by the Nuclear Regulatory Commission (NRC). Except for Combat Mix, all other munitions, live or inert, practice or full-scale, are prohibited from use in a DU Impact Area. Testing of 30 mm API (DU) munitions and reliability certification flight tests are limited to the following locations:

8.3.1. 30 mm API (DU) Testing.

8.3.1.1. Eglin Air Force Base, Florida, Area C-64. To conduct life cycle testing of 30mm API (PGU-14/B) ammunition, rounds are fired into an enclosed gun butt. Use Area C-64C to handle, store, machine, and test R&D items within an enclosed test chamber.

8.3.1.2. Nevada Test and Training Range, Nevada, Target 63-10. To conduct Test and Evaluation in order to verify ballistics, Operational Flight Program (OFP) software changes, Low Altitude Safety and Targeting Enhancement (LASTE) upgrades, and to

conduct USAF Weapons School instructor pilot training and tactical employment evaluation using Combat Mix.

8.3.2. Reliability Certification Flight Tests.

8.3.2.1. Authorized DoD installations in support of the reliability certification flight test program include: UTTR; Eglin AFB; Kwajalein Test Range; Alaska Test Range; and Tonopah Test Range. Reliability certification flight test activities at Vandenberg AFB, Nellis AFB, Whiteman AFB, and Barksdale AFB are limited to carrier/weapon interface and launch only.

8.3.2.2. Use of DU for reliability certification flight tests is authorized under AF auspices by Section 91(b) of the Atomic Energy Act of 1954 and falls under the jurisdiction of HQ AFSC/SEW.

8.4. Disposal/Decommission Procedures.

8.4.1. Disposal of Expended DU Penetrators. Expended DU penetrators and visible fragments will be collected, packaged, and disposed of in coordination with the Installation Radiation Safety Officer and the Air Force RIC. Before commencing clearance actions, an EOD team will sweep the Impact Area and "safe" any UXO. Annually, authorized personnel will manually remove visible DU rounds and fragments, and package them for disposal (see paragraph **8.4.1.2**).

8.4.1.1. Authorized Personnel. Personnel trained in DU hazards and wearing the appropriate personal protective equipment, as determined by a qualified health physicist and the Installation Radiation Safety Officer, will remove penetrators and fragments.

8.4.1.2. Disposal Packing Requirements. Penetrators and fragments will be packaged for disposal or recycling IAW instructions provided by AFRMWO. Prepare requests for disposal or recycling IAW AFI 40-201 and coordinate with the Installation Radiation Safety Officer.

8.4.1.3. Contaminated Targets. Vehicles and tanks that are no longer intended to be used as targets or are so damaged from use that they are in need of replacement will be identified and decontaminated or have arrangements made for proper disposal or recycling (See paragraph **8.4.1.2**).

8.4.2. Decommission Plan. Prior to expending DU at any authorized location, units will develop a decommissioning plan identifying costs to remediate DU contamination at the site based on current technology. Review and update the decommissioning plan biennially and provide a copy of the plan to the RIC (AFMOA/SGOR).

Chapter 9

NATURAL INFRASTRUCTURE MANAGEMENT AND ENCROACHMENT PREVENTION

9.1. Range Natural Infrastructure Management & Encroachment Prevention. In order to ensure mission readiness, adequate natural infrastructure (air, land, water, and frequency spectrum) are needed to test, train, and perform the Air Force's varied missions at its ranges. These resources can be degraded or denied in some locations due to environmental issues or encroachment. Encroachment comes in many forms, but often results in diminished operations or significant workarounds, inconveniences, and additional costs of doing business. Therefore, it is important to maintain natural infrastructure and protect against encroachment wherever possible to meet operational requirements.

9.1.1. In order to document and track efforts to sustain, restore and modernize (SRM) the natural infrastructure to ensure operational capability, each range in conjunction with a multi-disciplinary team, including wing civil engineering, safety, EOD, legal, etc., shall develop and maintain a CRP as discussed in paragraph **3.2.4**.

9.1.2. The CRP will document encroachment issues, both internally and externally, for ranges and associated airspace describing impacts on the mission. Internal factors include, but are not limited to, wetlands, threatened and endangered (T/E) species, hazardous waste sites, frequency spectrum, and UXO. External factors include, but are not limited to, incompatible land use zoning, frequency spectrum restrictions, and local and regional environmental constraints. The ROA will work with the surrounding federal, state, and local governments to minimize external encroachments.

9.1.3. Regulatory compliance is necessary and desirable. Protection of human health; conservation of wetlands and endangered species; and conservation of cultural resources are essential range management activities. Compliance activities and attendant metrics, however, do not provide an adequate measure of program management effectiveness absent a clear linkage to operational requirements. Therefore, it is Air Force policy to sustain, restore, and modernize our natural infrastructure over its useful life to ensure adequate resource capability for the warfighter and to minimize encroachment. Protection of human health and conserving cultural and natural resources are inherent in this requirement.

9.2. Integrated Natural and Cultural Resources Program. Air Force ranges will conserve natural resources pursuant to the Sikes Act and other applicable laws and regulations. The cultural resources program will be implemented by an approved ICRMP. The INRMP is the sole tool for implementing the military installation natural resources program. The ICRMP is the sole tool for implementing the military cultural resources program. Each INRMP and ICRMP will be written IAW AFI 32-7064 and AFI 32-7065 to support the current and future known mission requirements identified in the CRP and will be amended as mission requirements change significantly.

9.3. Environmental Compliance, Conservation, and Pollution Prevention.

9.3.1. Environmental Compliance. Air Force ranges will conduct their activities according to national environmental policy and meet environmental compliance guidelines set forth in AFI 32-7047, *Environmental Compliance Tracking and Reporting*, and DoDI 4715.6,

Environmental Compliance. The Air Force will comply with applicable Federal, State, and local environmental laws and standards. Air Force activities in foreign countries will comply with the DoD Final Governing Standards, or in their absence, the environmental criteria of the DoD Overseas Environmental Baseline Guidance Document.

9.3.2. Conservation and Pollution Prevention. The Air Force will conserve natural and cultural resources through effective environmental planning. The Air Force will prevent future pollution by reducing use of hazardous materials and releases of pollutants into the environment through source reduction, recycling, and hazardous material substitutions. Commanders at all levels as well as all Air Force employees are responsible for full compliance with national and Air Force environmental policy and are accountable for the environmental consequences of their actions.

9.3.3. Military Munitions Rule (MMR). The regulations governing the cradle-to-grave management of hazardous waste are codified in Title 40 CFR Parts 260-270. The portion of those regulations that determine when military munitions become solid waste and provide standards for their management as hazardous waste are codified in Title 40 CFR , Part 266, Subpart M, "Military Munitions" (40 CFR §§ 266.200 -- 266.206). MAJCOMs/ROAs will comply with the standards established in the Environmental Protection Agency's (EPA) MMR to meet EPA regulatory requirements on active and inactive ranges. Ensure environmental management flights are involved in the process.

9.3.4. Material Potentially Presenting an Explosive Hazard (MPPEH). MAJCOMs/ROAs should manage active and inactive ranges under their control to maintain long-term viability of DoD ranges while protecting human health and the environment and to minimize future clearance costs. Ranges and munitions should be designed to minimize potential explosive hazards and harmful environmental impacts and to promote resource recovery and recycling. Each MAJCOM/ROA will comply with DoDI 4140.62 and DoDD 4715.11 and 4715.12.

9.4. Programming Guidance. Eligible environmental requirements shall be identified for funding in ACES. The ranges should be projecting environmental requirements in POM submissions. Your host installation Civil Engineer (CE) Environmental Office can assist you in identifying projects eligible for environmental funding versus environmentally related operational requirements that must be funded with the ranges operations and maintenance funds.

9.5. Environmental Database. It is critical for the Air Force Operational Range Environmental Program to have an accurate database of environmental attributes of operational ranges. This database supports informed and accurate environmental resource decisions to sustain our operational ranges into the future. Each range shall respond to annual data calls and provide the requested information in coordination with the host CE squadron/environmental office.

9.6. Operational Range Environmental Assessment Program. Ranges shall work with the host CE squadron/environmental shop to conduct operational range munitions constituent migration assessments IAW DoDD 4715.11, DoDD 4715.12, DoDI 4715.14, *Operational Range Assessments*, and implementing Air Force guidance.

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(ANG)

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Attachment 1

GLOSSARY OF REFERENCES AND SUPPORTING INFORMATION

References

NOTE:

The user of this instruction is responsible for verifying the currency of the cited documents.

Legislative

10 United States Code § 172, *Ammunition Storage Board*

10 United States Code § 2701, *Environmental Restoration Program*

42 United States Code § 2121 et seq., *Legislation and Federal Regulations*

42 United States Code §§ 4321–4347, *National Environmental Policy Act of 1969*

42 United States Code §§ 6901-6992, *Resource Conservation and Recovery Act*

42 United States Code § 9604, *Response Authorities*

43 United States Code §§ 155-158

32 CFR Part 989, *Environmental Impact Analysis Process*

40 CFR Part 266, Subpart M, *Military Munitions*

Executive Orders

Executive Order 11988, *Floodplain Management*, 24 May 1977

Executive Order 11990, *Protection of Wetlands*, 24 May 1977

Executive Order 12372, *Intergovernmental Review of Federal Programs*, 14 July 1982

Executive Order 12580, *Superfund Implementation*, 23 January 1987

US Government Agency Publications

CJCSM 3212.02, *Performing Electronic Attack in the United States and Canada for Tests, Training and Exercises*, 15 Oct 2003 (Current as of 16 Mar 2007)

DoD Instruction 3100.11, *Illumination of Objects in Space by Lasers*, 31 March 2000

DoD Directive 3200.11, *Major Range and Test Facility Base (MRTFB)*, 27 Dec 2007

DoD Instruction 3200.16, *Operational Range Clearance*, 13 Jun 2005

DoD Instruction 4140.62, *Management and Disposition of Material Potentially Presenting an Explosive Hazard (MPPEH)*, 3 Dec 2004

DoD 4145.26-M, *DoD Contractors' Safety Manual for Ammunition and Explosives*, 13 Mar 2008

DoD 4160.21-M, *Defense Materiel Disposition Manual*, 18 Aug 1997

DoD Instruction 4715.6, *Environmental Compliance*, 24 Apr 1996

DoD Directive 4715.11, *Environmental and Explosives Safety Management on Operational Ranges Within the United States*, 10 May 2004

DoD Directive 4715.12, *Environmental and Explosives Safety Management on Operational Ranges Outside the United States*, 12 Jul 2004

DoD Instruction 4715.14, *Operational Range Assessments*, 11 Dec 2006

DoD 5105.38-M, *Security Assistance Management Manual (SAMM)*, 3 Oct 2003

DoD Instruction 6055.7, *Accident Investigation, Reporting, and Recordkeeping*, 3 Oct 2000

DoD Directive 6055.9, *Explosives Safety Management and the DoD Explosives Safety Board*, 29 Feb 2008

DoD 6055.9-STD, *DoD Ammunition and Explosives Safety Standards*, 1 Oct 2004

DoD Instruction 6055.11, *Protection of DoD Personnel from Exposure to Radiofrequency Radiation and Military Exempt Lasers*, 21 Feb 1995

FAA Order 7400.2F, Chapter 6, *Outdoor Laser Operations*, 16 February 2005

FAA Joint Order 7610.4, *Special Operations*, 18 Jan 2007

FAR Part 45 § 304, *Providing Motor Vehicles*

Joint Publication 1-02, *Department of Defense Dictionary of Military and Associated Terms*, 12 Jul 2007

Joint Publication 3-09.3, *Joint Tactics, Techniques, and Procedures for Close Air Support (CAS)*, 2 Sep 2005

National Telecommunications and Information Administration, *Manual of Regulations and Procedures for Federal Radio Frequency Management*, January 2008

Air Force Publications

AFDD 1-2, *Air Force Glossary*, 11 Jan 2007

AFI 10-901, *Lead Operating Command--Communications and Information Systems Management*, 22 Mar 2001

AFI 11-202, Volume 3, *General Flight Rules*, 5 Apr 2006

AFI 11-214, *Air Operations and Procedures*, 22 Dec 2005

Aircraft specific AFI 11-2MDS series

AFI 13-112, Volume 1, *Joint Terminal Attack Controller (JTAC) Training Program*, 15 Feb 2008

AFPD 13-2, *Air Traffic, Airfield, Airspace, and Range Management*, 7 Aug 2007

AFI 13-201, *Airspace Management*, 1 Dec 2006

AFMAN 16-101, *International Affairs and Security Assistance Management*, 20 Jun 2003

AFI 21-101, *Aircraft and Equipment Maintenance Management*, 29 Jun 2006

AFI 21-103, *Equipment Inventory, Status and Utilization Reporting*, 14 Dec 2005

AFI 21-118, *Improving Air and Space Equipment Reliability and Maintainability*, 2 Oct 2003

AFI 24-301, *Vehicle Operations*, 1 Nov 2001

AFI 25-201, *Support Agreements Procedures*, 1 May 2005

AFI 31-101, *The Air Force Installation Security Program (FOUO)*, 1 Mar 2003

AFI 32-3001, *Explosive Ordnance Disposal Program*, 4 Oct 2007

AFI 32-7047, *Environmental Compliance Tracking and Reporting*, 8 Apr 2004

AFI 32-7061, *The Environmental Impact Analysis Process*, 12 Mar 2003

AFI 32-7064, *Integrated Natural Resources Management*, 17 Sep 2004

AFI 32-7065, *Cultural Resources Management Program*, 1 Jun 2004

AFI 32-7066, *Environmental Baseline Surveys in Real Estate Transactions*, 25 Apr 1994

AFI 32-7080, *Pollution Prevention Program*, 12 May 1994

AFI 32-9001, *Acquisition of Real Property*, 27 Jul 1994

AFI 32-9004, *Disposal of Real Property*, 21 Jul 1994

AFI 33-101, *Communications and Information Management Guidance and Responsibilities*, 24 Jul 1998

AFI 33-103, *Requirements Development and Processing*, 18 Mar 1999

AFI 33-118, *Electromagnetic Spectrum Management*, 18 July 2005

AFMAN 33-363, *Management of Records*, 1 Mar 2008

AFI 36-2226, *Combat Arms Program*, 26 Feb 2003

AFI 40-201, *Managing Radioactive Materials In The US Air Force*, 13 Apr 2007

AFOSH Standard 48-9, *Radio Frequency Radiation (RFR) Safety Program*, 1 Aug 1997

AFOSH Standard 48-139, *Laser Radiation Protection Program*, 10 Dec 1999

AFRLI 61-103, *AFRL Research Test Management*, 1 Nov 2007

AFI 63-124, *Performance-Based Services Acquisition (PBSA)*, 1 Aug 2005

AFPAM 90-902, *Operational Risk Management (ORM) Guidelines and Tools*, 14 Dec 2000

AFMAN 91-201, *Explosives Safety Standards*, 18 Oct 2001

AFI 91-202, *The US Air Force Mishap Prevention Program*, 1 Aug 1998

AFI 91-204, *Safety Investigations and Reports*, 14 Feb 2006

AFPD 99-1, *Test and Evaluation Process*, 22 Jul 1993

AFI 99-103, *Capabilities Based Test and Evaluation*, 26 Feb 2008

AFMCI 99-103, *Test Management*, 22 Nov 2004

AFI 99-106, *Joint Test and Evaluation Program*, 11 Jul 2001

AFI 99-108, *Programming and Reporting Aerial Target and Missile Expenditures in Test and Evaluation*, 1 Mar 2007

AFI 99-109, *Major Range and Test Facility Base (MRTFB) Test and Evaluation Resource Planning*, 17 May 2006

AFI 99-120, *Forecasting and Programming Munitions Telemetry and Flight Termination Systems*, 1 Mar 2007

T.O. 1-1M-34, *Aircrew Weapons Delivery Manual*

T.O. 1-1M-34-1, *Aircrew Weapons Delivery Manual (classified)*

Seven-Command CTR Charter

Other Publications

American National Standards Institute Z136.1, *Safe Use of Lasers*

American National Standard Institute Z136.6, *Safe Use of Lasers Outdoors*

ANSI/IEEE C95.1 *Standard for Safety Levels with Respect to Human Exposure to Radio Frequency Electromagnetic Fields, 3 kHz to 300 GHz*

MIL HDBK 828A, *Laser Safety on Ranges and in Other Outdoor Areas*

Mil-Std-461F, *Requirements For The Control Of Electromagnetic Interference Characteristics Of Subsystems And Equipment*, 10 December 2007

Abbreviations and Acronyms

AAA—Anti-Aircraft Artillery

ACC—Air Combat Command

ACES—Automated Civil Engineers System

ACTS—Air Combat Training Systems

ADVON—Advanced Echelon

AEA—Atomic Energy Act

AETC—Air Education and Training Command

AFAE—Air Force Acquisition Executive

AFI—Air Force Instruction

AFMAN—Air Force Manual

AFMC—Air Force Materiel Command

AFMOA—Air Force Medical Operations Agency

AFOSH—Air Force Occupational Safety and Health

AFOTEC—Air Force Operational Test and Evaluation Center

AFPD—Air Force Policy Directive

AFRC—Air Force Reserve Command

AFREP—Air Force Representative

AFRL—Air Force Research Laboratory

AFRMWO—Air Force Radioactive and Mixed Waste Office

AFROCC—Air Force Requirements for Operational Capabilities Council

AFRPA—Air Force Real Property Agency

AFSOC—Air Force Special Operations Command

AFWS—Air Force Weapons School

AGL—Above Ground Level

AM—Amplitude Modulation

AMC—Air Mobility Command

ANG—Air National Guard

API—Armor Piercing Incendiary

ATC—Air Traffic Control

ATCAA—Air Traffic Control Assigned Airspace

AWOS—Automated Weather Observing System

BLM—Bureau of Land Management

CAF—Combat Air Forces

CAS—Close Air Support

CDD—Capability Development Document

CE—Civil Engineer

CFA—Controlled Firing Area

CFR—Code of Federal Regulations

COMAFFOR—Commander, Air Force Forces

CPD—Capability Production Document

CRP—Comprehensive Range Plan

CTEIP—Central Test and Evaluation Investment Program

CTR—Combat Training Range

DDESB—DoD Explosives Safety Board

DEW—Directed Energy Weapon

DEWDZ—Directed Energy Weapon Danger Zone

DEWSO—Directed Energy Weapons Safety Officer

DMPI—Designated Mean Point(s) of Impact

DoD—Department of Defense

DoDD—Department of Defense Directive

DoDI—Department of Defense Instruction

DRMO—Defense Reutilization and Marketing Office

DT&E—Development Test and Evaluation

DU—Depleted Uranium

DZ—Drop Zone

EA—Electronic Attack

EBS—Environmental Baseline Survey

EC—Electronic Combat

ECM—Electronic Counter-Measures

ECR—Electronic Combat Range

EFX—Expeditionary Force Experiments

EIAP—Environmental Impact Analysis Process

EOD—Explosive Ordnance Disposal

EPA—Environmental Protection Agency

EPF—Environmental Planning Function

ESOH—Environmental, Safety, and Occupational Health

ESS—Electronic Scoring Site

ETAC—Enlisted Terminal Attack Controller

EW—Electronic Warfare

FAA—Federal Aviation Administration

FAC(A)—Forward Air Controller (Airborne)

FAR—Federal Acquisition Regulation

FDE—Force Development Evaluation

FLIP—Flight Information Publication

FM—Frequency Modulation

FMS—Foreign Military Sales

FYDP—Future Years Defense Program

GFE—Government Furnished Equipment

GIS—Geographic Information System

HTSA—Host-Tenant Support Agreement

I&M—Improvement and Modernization

IADS—Integrated Air Defense System

IAW—In Accordance With

ICD—Initial Capabilities Document

ICRMP—Integrated Cultural Resources Management Plan

IFR—Instrument Flight Rules

IMT—Information Management Tool

INRMP—Integrated Natural Resources Management Plan

IR—IFR Route

ISA—Inter-service Support Agreement

JAWSS—Joint Advanced Weapon Scoring System

JT&E—Joint Test and Evaluation

JTAC—Joint Terminal Attack Controller

KIAS—Knots Indicated Airspeed

LASTE—Low Altitude Safety and Targeting Enhancement

LMR—Land Mobile Radio

LOA—Letter of Agreement

LSDZ—Laser Surface Danger Zone

LSO—Laser Safety Officer

LZ—Landing Zone

MAF—Mobility Air Forces

MAJCOM—Major Command

MDS—Mission Design Series

MMR—Military Munitions Rule

MOA—Military Operations Area

MOU—Memorandum of Understanding

MPPEH—Material Potentially Presenting an Explosive Hazard

MRTFB—Major Range and Test Facility Base

MSL—Mean Sea Level

MTR—Military Training Route

NAS—National Airspace System

NCO—Non-Commissioned Officer

NEPA—National Environmental Policy Act of 1969

NM—Nautical Mile

NOHD—Nominal Ocular Hazard Distance

NOTAM—Notice to Airmen

NRC—Nuclear Regulatory Commission

NSA—National Security Area

NTTR—Nevada Test and Training Range

NVDs—Night Vision Devices

O&M—Operations and Maintenance

OI—Operating Instruction

OP—Observation Post

OFP—Operational Flight Program

OPR—Office of Primary Responsibility

ORM—Operational Risk Management

OT&E—Operational Test and Evaluation

PACAF—Pacific Air Forces

PARC—Pacific Alaska Range Complex

PDF—Probability Distribution Function

PIWG—Product Improvement Working Group

PEM—Program Element Monitor

PMD—Program Management Directive

POM—Program Objective Memorandum

PTR—Primary Training Range

QA—Quality Assurance

QAE—Quality Assurance Evaluator

QASP—Quality Assurance Surveillance Plan

QDR—Quadrennial Defense Review

R&D—Research and Development

R&M—Reliability and Maintainability

R3—Range Residue Removal

RAMPOD—Reliability, Availability, Maintainability Logistics Engineering Support System for Pods

RAP—Ready Aircrew Program

RCO—Range Control Officer

RDS—Records Disposition Schedule

RIC—Radioisotope Committee

RMAST—Range Management Software Tool

ROA—Range Operating Authority

ROO—Range Operations Officer

RSO—Range Safety Officer

RST—Range Support Tasking

RTO—Range Training Officer

SAF—Secretary of the Air Force

SAM—Surface-to-Air Missile

SDZ—Surface Danger Zone

SECDEF—Secretary of Defense

SPO—Systems Program Office

SRB—Safety Review Board (See AFI 99-103, *Capabilities Based Test and Evaluation)*

SRM—Sustain, Restore and Modernize

STEM-B—Systems Telecommunications Engineering Manager—Base-Level

SUA—Special Use Airspace

T/E—Threatened and Endangered

TACP—Tactical Air Control Party

TEMP—Test and Evaluation Master Plans

TIPP—Test Investment Planning and Programming

T.O.—Technical Order

TOSS—Television Ordnance Scoring System

TP—Training Projectile

TSPI—Time-Space-Position-Information

T/TSNS—Test/Training Space Need Statement

UHF—Ultra-High Frequency

USAFE—United States Air Forces in Europe

U.S.C.—United States Code

UTTR—Utah Test and Training Range

UXO—Unexploded Ordnance

VCNCO—Vehicle Control Non-Commissioned Officer

VCO—Vehicle Control Officer

VFR—Visual Flight Rules

VHF—Very-High Frequency

VR—VFR Route

WDZ—Weapons Danger Zone

WIKI—Wikipedia

Terms

NOTE:—The purpose of this glossary is to help the reader understand the terms used in this publication. It does not encompass all pertinent terms. Joint Publication 1-02, *DoD Dictionary of Military and Associated Terms*, and AFDD 1-2, *Air Force Glossary*, contain standardized terms and definitions for DoD and USAF use.

Air Force Representative (AFREP)—An Air Force officer stationed at HQ FAA or a regional office and accredited by AF/A3/5 to provide USAF representation to FAA on airspace/range and air traffic control matters.

Alert Area—Airspace designated to inform pilots of a high level of training activity or any unusual activity where prior knowledge would significantly enhance air safety. There are no restrictions placed on non-participating IFR or VFR aircraft.

Armor Piercing Incendiary (API)—A 30mm round consisting of a 0.66 pound extruded DU penetrator, alloyed with 0.75 weight percent titanium, encased in a 0.8 mm-thick aluminum shell and windscreen.

Byproduct Material—Radioactive material (except Source or Special Nuclear Material) yielded in or made radioactive by exposure to radiation, incident to the process of producing or using Source or Special Nuclear Material.

Certificate of Clearance—An official document that certifies removal of all dangerous and explosive materials reasonably possible to detect. The certificate is dated, and a range clearance report is attached. The cleared areas are identified in red crosshatch on a map, and annotated in the map legend.

Comprehensive Range Planning—An iterative process that examines current and projected operational needs to identify the best use for limited range development resources and the largest threats to the military value of ranges and airspace.

Comprehensive Range Plan (CRP)—The range commander's plan, approved by the MAJCOM, that baselines the range, establishes the Vision with supporting goals and develops the strategy for attaining the vision through objectives and an implementation approach.

Controlled Firing Area (CFA)—An area in which ordnance firing is conducted under controlled conditions so as to eliminate hazards to non-participating aircraft, and to ensure the safety of persons and property on the ground. Aeronautical charts do not depict CFAs.

Controlling Agency—Air Traffic Control (ATC) facility responsible for providing airborne control services in and around a designated airspace. With respect to a restricted area, the using

agency may authorize transit through or flight within the restricted area according to a joint-use agreement.

Danger Area—The composite area of the Hazard Area and all active Laser Surface Danger Zones (LSDZs) and active Directed Energy Weapons Danger Zones (DEWDZs).

DoD Explosives Safety Board (DDESB)—DoD organization charged with promulgation of ammunition and explosives safety policy and standards, and with reporting on effectiveness of the implementation of such policy and standards IAW DoDD 6055.9.

Depleted Uranium (DU)—DU is Uranium ore processed to remove material useful for Nuclear reactor fuel and Nuclear weapons. Natural Uranium consists primarily of a mixture of two isotopes of uranium: Uranium-235 and Uranium-238, 0.7 and 99.3 percent, respectively. The resulting Uranium-238 is Depleted Uranium, which is 0.7 times as radioactive as Natural Uranium. DU is a dense, heavy metal with a limited health hazard, and has two properties that make it ideal for military applications: extreme density and its surface ignites on impact (especially with steel).

Directed Energy Weapon—A weapon system using directed energy primarily as a direct means to deny, disrupt, degrade (damage), or destroy enemy equipment, facilities, or personnel.

Emitter/Simulator—Generic terms used to describe threat equipment operated at Electronic Combat Ranges (ECR) and Electronic Scoring Sites (ESS). However, ACC operates a variety of equipment including, but not limited to: Emitter only systems, Emitter-Receiver-Processors, and replica type systems. Carefully compare the similarities and features of different systems and consider operational requirements. Surface-to-Air Missile (SAM) and Anti-Aircraft Artillery (AAA) simulators include all manned and unmanned threat emitters.

Environmental Impact Analysis Process (EIAP)—The formal Air Force process for implementing the National Environmental Policy Act (NEPA) and the Council on Environmental Quality's NEPA Regulations, used to support Air Force decision making and assess environmental impacts resulting from a proposed action and its reasonable alternatives.

Environmental Planning Function (EPF)—At every level of command, the EPF is a key participant responsible for the EIAP. At the request of the proponent, the EPF manages the preparation of environmental documents and assists the proponent in obtaining review of environmental documents.

Essential Personnel—Those personnel on a range participating in a test, training or evaluation scenario involving the employment of ordnance (air/surface/sea) including Mission Essential Personnel and those personnel not required for ordnance employment including maneuver elements, opposition forces, instructors, evaluators, etc.

Explosive Ordnance Disposal (EOD)—The detection, identification, on-site evaluation, rendering safe, recovery, and final disposal or unexploded explosive ordnance. It may also include explosive ordnance that has become hazardous by damage or deterioration.

EOD Personnel/Technician—Military personnel who have graduated from the Naval School, Explosive Ordnance Disposal; are assigned to a military unit with a Service-defined EOD mission; and meet Service and assigned unit requirements to perform EOD duties. EOD Personnel have received specialized training to address explosive and chemical agent hazards during both peacetime and wartime. EOD Personnel are trained and equipped to perform Render

Safe Procedures (RSP) on nuclear, biological, chemical, and conventional munitions, and on improvised explosive devices. (DoD Definition)

Government Controlled—Control exercised by any federal government agency.

Hazard Area—The composite area of all Weapons Danger Zones (WDZs) and surface danger zones (SDZs) for all authorized weapon delivery events against targets approved for actual expenditures of ordnance.

Impact Area—The area on a range immediately surrounding a target or designated mean point of impact that is approved for the actual delivery of ordnance. The Impact Area demarcation should normally be no less than a) 500 feet from the center of a target or designated mean point of impact (DMPI) approved for live ordnance, or b) 300 feet from the center of a target or DMPI used solely for inert or practice ordnance.

Isotope—Nuclides having the same number of protons in their nuclei, and hence the same atomic number, but differing in the number of neutrons, and therefore in the mass number. Almost identical chemical properties exist between isotopes of a particular element.

Joint Terminal Attack Controller—An individual qualified IAW JP3-09.3 to provide terminal control for the delivery of weapons by aircraft.

Joint Use—With respect to ranges, Joint Use means other MAJCOMs or services may use, as long as they conduct operations IAW this instruction, as supplemented. With respect to range airspace, it means the use by civil or other military aviation when it is not active.

Laser Surface Danger Zone—As identified in the laser certification process, that area on the surface where a class 3 or 4 laser injury potential may exist during laser operation.

License—Nuclear Regulatory Commission (NRC) written authorization delegating regulatory authority to receive, possess, use, or transfer Byproduct, Source, or Special Nuclear Material.

(Added-ANG) Lost Link— UA pilot/operator has lost the ability to provide real-time control of the UA. Loss may be permanent or temporary.

(Added-ANG) Lost link procedures— Pre-approved written procedures to be followed by the UA in the event of lost link. RCOs will approve and maintain a copy of all lost link procedures. Lost procedures may make use of UA Zones or UA VFR holding points.

Major Range and Test Facility Base (MRTFB)—DoDD 3200.11 establishes policy regarding MRFTB facilities to include definition, designation and responsibilities.

Material Potentially Presenting an Explosive Hazard (MPPEH)—Material potentially containing explosives or munitions (e.g., munitions containers and packaging material; munitions debris remaining after munitions use, demilitarization, or disposal; and range-related debris); or material potentially containing a high enough concentration of explosives such that the material presents an explosive hazard (e.g., equipment, drainage systems, holding tanks, piping, or ventilation ducts that were associated with munitions production, demilitarization or disposal operations). Excluded from MPPEH are munitions within DoD's established munitions management system and other hazardous items that may present explosion hazards (e.g., gasoline cans, compressed gas cylinders) that are not munitions and are not intended for use as munitions

Military Operations Area (MOA)—Special Use Airspace allocated to the military to separate/segregate certain military activities from Instrument Flight Rules (IFR) traffic, and to identify the location of these military activities to Visual Flight Rules (VFR) traffic. VFR aircraft are not restricted from transiting MOAs.

Military Training Route (MTR)—A low-level, high-speed training route established IAW criteria in FAA Joint Order 7610.4, *Special Operations*. MTRs are used by DoD to conduct low altitude navigation and tactical training, in instrument and visual weather conditions, below an altitude of 10,000 feet MSL and at airspeeds more than 250 KIAS. Routes are established as IFR routes (IR) or VFR routes (VR). The FAA has approval authority to implement IRs and the appropriate MAJCOM approves VR implementation. Environmental documentation is required for implementation IAW AFI 32-7061. VRs are processed through the FAA via the AFREP. MTRs are published in FLIP AP/1B and charted on FAA Sectionals and DoD Low IFR charts. AFREPs assign all route numbers.

Mission Essential Personnel—Those personnel on a range directly required for the employment of ordnance (air/surface/sea) in a test, training or evaluation scenario. This may include JTACs, TACPs, range control officers, scorers, and any other personnel identified as required by the ROA.

National Security Area—Airspace of defined vertical and lateral dimensions established at locations where there is a requirement for increased security of ground facilities. Pilots are requested to voluntarily avoid flying through an NSA. When it is necessary to provide a greater level of security, flight in an NSA may be temporarily prohibited pursuant to the provisions of 14 CFR 99.7, Special Security Instructions. Where there is a need to restrict flight operations in an NSA, the required restriction will be issued by Airspace and Rules and disseminated via NOTAM.

Nonessential Personnel—Those personnel required to be on range but who remain outside of active Danger Areas. Examples include gate guards for access control, road guards for maneuver units, range personnel conducting maintenance or administrative duties not participating in a test, training or evaluation scenario and not directly required for the employment of ordnance, etc.

Ordnance—

Boosted Munitions (forward firing): Munitions such as the AGM-65 Maverick missile and the 2.75" folding fin rocket driven by propellant. These are also considered live munitions when they are equipped with a explosive or incendiary warhead.

***Training*:**

Full-scale Inert: Concrete-filled or cast ductile iron bombs of the same size and weight of the Live Munition but containing no explosives, pyrotechnics, or chemical agents.

Practice Bombs: Practice bombs may be full-scale or sub-scale. Some practice bombs contain a small explosive charge or pyrotechnic that marks the point of impact with a small cloud of smoke or flash. For example, BDU-33 practice bombs contain a MK 4 spotting charge, and MK 82 practice bombs may contain 6.25 pounds of composition C-4 high explosive. British 1,000-pound class practice bombs may contain 50 pounds of TORPEX. These bombs normally use a fuze to initiate the high explosive fillers.

Target Practice (TP): Ball projectile gun ammunition that has no explosive in the projectile.

Live Munitions: Munitions containing a fuze and a high-explosive (HE) or incendiary warhead designed to detonate either prior to or upon impact. They can be bombs, missiles, rockets, bullets, etc.

Operational Range—A range that is under the jurisdiction, custody, or control of the Secretary of Defense and that is used for range activities; or although not currently being used for range activities that is still considered by the Secretary to be a range and has not been put to a new use that is incompatible with range activities. (10 U.S.C. 101(e)(3)(A) and (B)). Also includes "military range," "active range," and "inactive range" as those terms are defined in 40 CFR §266.201.

Penetrator—Dense projectile component of ammunition round designed to pierce armor.

Permit (Noun)—

***In General*:** an official document or certificate giving permission for something.

***Radioactive Material Permit*:** US Air Force or US Navy Radioactive Material Permit issued to a unit with the respective service, under the authority of that Service's Master Materials License.

Product Improvement Working Group (PIWG)—A number of individuals, representing aerospace equipment users and single managers, assembled together for the purpose of product improvement.

Program Objective Memorandum (POM)—A biennial memorandum submitted to the Secretary of Defense (SECDEF) from Military Department and Defense agency. It proposes total program requirements for the next six years. It includes rationale for planned changes from the approved Future Years Defense Program (FYDP) baseline within fiscal guidance issued by the SECDEF.

Prohibited Area—A specified area over the land of a state, or territorial waters adjacent thereto, within which the flight of aircraft is prohibited in the interest of national security and welfare.

Proponent—The office, unit, single manager or activity at any level that initiates, or is responsible for an Air Force action.

Radiation—The emissions, either electromagnetic or particulate, resulting from the transformation of an unstable atom or nucleus.

Radiation Safety Officer—An individual, designated by a Commander or the Air Force Radioisotope Committee, who has the specific education, military training, and professional experience in radiation protection practice, to manage radiation safety activities covered by a USAF Radioactive Material Permit.

Radioactive Material—Material with unstable nuclei that decay by emission of ionizing radiation. The radiation emitted may be alpha or beta particles, gamma or X-rays, or neutrons.

Range—

As set forth at 10 U.S.C. § 101(e)(1), the term "range", when used in a geographic sense, means a designated land or water area that is set aside, managed, and used for range activities of the Department of Defense. Such term includes the following:

(A) Firing lines and positions, maneuver areas, firing lanes, test pads, detonation pads, impact areas, electronic scoring sites, buffer zones with restricted access, and exclusionary areas.

(B) Airspace areas designated for military use in accordance with regulations and procedures prescribed by the Administrator of the Federal Aviation Administration.

As set forth at 10 U.S.C § 101(e)(2), the term "range activities" means—

(A) research, development, testing, and evaluation of military munitions, other ordnance, and weapons systems; and

(B) the training of members of the armed forces in the use and handling of military munitions, other ordnance, and weapons systems.

As set forth at 10 U.S.C § 101(e)(3), the term "operational range" means a range that is under the jurisdiction, custody, or control of the Secretary of a military department and—

(A) that is used for range activities, or

(B) although not currently being used for range activities, that is still considered by the Secretary to be a range and has not been put to a new use that is incompatible with range activities.

Active Range—For the purposes of this instruction, an active range is an operational range that is being used for range activities.

ANG Range—For the purposes of this instruction, ANG ranges include all buildings and property that is established by the lease, license, permit or other written agreement, for either exclusive or joint use by the ANG for weapons delivery operations.

Inactive Range—For the purposes of this instruction, an inactive range is an operational range that is still considered to be a range and has not been put to a new use that is incompatible with range activities.

Range Clearance—Range clearance (previously known as "range residue clearance," "range decontamination," or "EOD clearance") is the surface-removal or disposal of MPPEH from the targets and surrounding areas. MPPEH includes unexploded ordnance, classified ordnance, inert ordnance debris, training projectile debris, and any other range material fired on, or upon a military range.

Range Clearance Report—A narrative statement about the removal and disposal of UXO and MPPEH on a specific range, and serves as a factual record of the debris clearance. Also known as a "Report of Clearance," it is not a "Certificate of Clearance" (defined above).

Range Control Officer (RCO)—The person responsible for range operations and safety. Except in situations where the RCO delegates weapons release clearance to a qualified flight lead, individual pilot or Forward Air Controller, or other briefed person.

Range Management Software Tool (RMAST)—The USAF range manager's information system that provides a single point of access to range management documentation, procedures and data collection. RMAST is a web based software tool located at **https://www.usafrmast.net**.

Range Operating Authority (ROA)—The wing commander, or designated commander responsible for operating and maintaining the range. For ANG-operated ranges, the range commander is designated as the ROA. The ROA may delegate the daily scheduling, management, and maintenance of the range to any appropriate subordinate unit.

Range Operations Officer (ROO)—The individual responsible for all range maintenance and day-to-day operating activities. The ROO interfaces with operations personnel and other base agencies. For matters of safety, the ROO will be subordinate to the RCO during aircraft operations on the range. The ROO will be qualified as a RCO. For ANG ranges, as assigned by range CC/OIC.

Range Service—

***Class A*—**Range is manned, has a ground-based scoring capability, and has a Range Control Officer (RCO) in the main or flank tower (or another MAJCOM approved location) who controls aircraft using the range.

***Class B*—**Range is either manned or unmanned, has a ground-based scoring capability, but does not have a RCO on the ground controlling aircraft. A qualified flight lead, individual pilot, FAC(A), JTAC or other briefed person performs the RCO function.

***Class C*—**Range is unmanned, with no scoring or aircraft control from the ground. A qualified flight lead, individual pilot, Forward Air Controller-Airborne (FAC[A]), JTAC or other briefed person performs the RCO function.

***Class D*—**An instrumented air-to-air range. It is manned by a Range Training Officer (RTO) who maintains radio contact with aircraft on the range during air combat training as required.

Range Training Officer (RTO)—The person responsible for monitoring ACTS, passing kill removal, and providing debriefs. The RTO will establish communications with aircraft entering the range.

Restricted Area—

An area (land, sea or air) in which there are special restrictive measures employed to prevent or minimize interference between friendly forces or an area under military jurisdiction in which special security measures are employed to prevent unauthorized entry.

Airspace where the flight of aircraft, while not wholly prohibited, is subject to restriction. When not activated by the using agency, the controlling ATC facility may authorize IFR or VFR operations in the area. If joint use is authorized, the name of the ATC controlling facility is annotated on the map.

An area that must contain all "Hazardous Activity" as defined by branch of service for specific type of aircraft using the range.

Scheduling Authority—The agency, organization or military activity responsible for scheduling all activities in designated land and airspace areas.

Shared Use—When the Range Operating Authority authorizes non-DoD, private or government agencies or individuals to use range land or airspace concurrently or non-concurrently.

Sortie—A term to describe a single training event performed by one aircraft from takeoff through landing. A single aircraft may only log one sortie per flight.

Sortie Operation—A term to define the use of training airspace or ranges by a single aircraft. A single aircraft may log multiple sortie operations per flight by using different training areas or the same area several times throughout the same flight.

Special Use Airspace (SUA)—Airspace of defined vertical and lateral dimensions wherein activities are confined. Certain limitations or restrictions may be imposed on non-participating aircraft. Except for Controlled Firing Areas, SUA is depicted on aeronautical charts. Types of Special Use Airspace include:

Alert Area.

Controlled Firing Area.

Military Operations Area.

National Security Area

Prohibited Area.

Restricted Area.

Warning Area.

Surface Danger Zone (SDZ)—The ground and airspace designated for vertical and lateral containment of projectiles, fragments, debris, and components resulting from the firing, launching, or detonation of weapon systems to include explosives and demolitions.

(Added-ANG) UA Operating Area— Area designated for UA operations within the restricted area.

(Added-ANG) UA VFR holding points— Geographic or GPS based locations to contain the UA at a specific location.

(Added-ANG) UA Zones— Published marshalling zones, defined by visual or GPS reference, used by UA and RCOs as departure/arrival points to/from UA launch locations. UA Zones are also used for lost link and emergency orbit points for UA.

Unexploded Ordnance (UXO)—As set forth at 10 U.S.C. § 101(e)(5), the term "unexploded ordnance" means military munitions that—

(A) have been primed, fused, armed, or otherwise prepared for action;

(B) have been fired, dropped, launched, projected, or placed in such a manner as to constitute a hazard to operations, installations, personnel, or material; and

(C) remain unexploded, whether by malfunction, design, or any other cause. Explosive ordnance that has been primed, fused, armed, or otherwise prepared for action, and then fired, dropped, launched, projected or placed in such a manner as to constitute a hazard to operations, installations, materials, or personnel and remains unexploded either by malfunction or design or for any other cause.

UXO-Qualified Personnel—Personnel who have performed successfully in military EOD positions, or are qualified to perform in the following Department of Labor, Service Contract Act, Directory of Occupations, contractor positions: UXO Technician II, UXO Technician III, UXO Safety Officer, UXO Quality Control Specialist, or Senior UXO Supervisor. UXO-Qualified Personnel must also meet DDESB experience and training requirements (DDESB Technical Paper 18)

US Air Force Master Materials License—The Nuclear Regulatory Commission License issued to the US Air Force Radioisotope Committee. The Master Materials License delegates to USAF regulatory authority over Byproduct, Source, and limited quantities of Special Nuclear Material.

US Air Force Radioactive Material Permit—Written authorization from the US Air Force Radioisotope Committee allowing USAF organizations to receive, possess, distribute, use, transfer, or dispose of radioactive materials.

US Air Force Radioisotope Committee (RIC)—A committee established according to, and the named licensee on USAF Master Materials License. RIC coordinates the regulatory and administrative aspects of licensing, possessing, distributing, using, transferring, transporting, and disposing of all radioactive material in the Air Force. RIC does not have regulatory authority over radioactive material transferred from the Department of Energy to the Department of Defense inside Nuclear weapons systems, certain components of weapons systems and Nuclear reactor systems, and components and fuel controlled under Section 91B of the Atomic Energy Act (AEA).

Warning Area—

A specified area above, below, or within which there may be potential danger.

Airspace of defined dimensions over international waters that contain activity that may be hazardous to non-participating aircraft.

An area that must contain all "Hazardous Activity" as defined by branch of service for specific type of aircraft using the range.

Weapons Danger Zone—The ground and airspace for lateral and vertical containment of a user-determined percentage of projectiles, fragments, debris, and components resulting from the firing, launching, and/or detonation of aviation delivered ordnance. Where software selectable, this instruction requires 99.9999% containment for surface fires (expressed as 1:1,000,000 escapement for SDZs), 99.999% containment for aviation-delivered gun ammunition, and 99.99% containment for all other aviation-delivered ordnance.

Wikipedia (Wiki)—A multilingual, web-based, free content encyclopedia project. Wikipedia is written collaboratively by volunteers from all around the world. With rare exceptions, its articles can be edited by anyone with access to the Internet. The RMAST Wikipedia site is editable only by those with RMAST access. The RMAST Wikipedia site is located at **https://www.usafrmast.net/wiki**

Attachment 2

RANGE PERSONNEL TRAINING

A2.1. General Training. All personnel assigned to the range will be trained in or demonstrate adequate knowledge of the following subjects:

A2.1. (ANG)Re-currency training on these items will be done annually at a minimum. Document all training. Additional annual training requirements: ATV/mule, Smokey Sam, Wild land Fire, munitions handling, all assigned laser systems, WDZ training and any other item specific to your range.

A2.1.1. Local range operating procedures.

A2.1.2. Maintenance procedures and issues.

A2.1.3. Hazardous Materials/Hazardous Waste and local environmental procedures.

A2.1.4. Poisonous or dangerous fauna and flora.

A2.1.5. Local weather hazards.

A2.1.6. Range fire protection/fire suppression procedures.

A2.1.7. Aircraft crash procedures.

A2.1.7. **(ANG)** These procedures will be exercised on an annual basis at a minimum.

A2.1.8. Local safety, emergency, and contingency procedures.

A2.1.8. **(ANG)** Ranges will conduct annual exercises on emergency procedures.

A2.1.9. Basic first aid procedures.

A2.1.10. Explosive and other ordnance hazards (EOD safety briefing).

A2.1.11. Range access control and security procedures.

A2.2. Range Operations Officer Training. As a minimum, the ROO should be trained in or demonstrate adequate knowledge of the following publications or subjects:

A2.2.1. Wing scheduling.

A2.2.2. QAE (phase I & II) training. (N/A for ANG)

A2.2.3. Unit Level On-Scene Mishap Investigation Commander.

A2.2.4. NEPA training.

A2.2.5. Risk Communication training.

A2.2.6. AFI 11-202, Volume 3, *General Flight Rules*.

A2.2.7. AFI 11-214

A2.2.8. Aircraft specific AFI 11-2MDS series.

A2.2.9. AFI 13-212, as supplemented.

A2.2.10. Approved Range Construction and Maintenance Methods on the RMAST wiki site.

A2.2.11. Intermediate command instructions and manuals applicable to range “operations”.

A2.2.12. RCO authority and responsibilities.

A2.2.13. Range Utilization Report/Range record keeping.

A2.2.14. EOD briefing on the proper handling of training munitions.

A2.2.15. USO or designated LSO training.

A2.2.16. WDZ Program training.

A2.2.17. Proper use and handling of applicable ground launched visual threats.

A2.3. Range Control Officer Training. As a minimum, the RCO should be trained in or demonstrate adequate knowledge of the following publications or subjects:

A2.3. (ANG)Re-currency training on these items will be done annually at a minimum for all RCOs and permanently assigned range crew involved with flying operations. Document all training.

A2.3.1. Wing scheduling.

A2.3.2. Unit Level On-Scene Mishap Investigation Commander.

A2.3.3. Public Affairs training.

A2.3.4. AFI 11-202, Volume 3, *General Flight Rules*.

A2.3.5. AFI 11-214

A2.3.6. Aircraft specific AFI 11-2MDS series.

A2.3.7. AFI 13-212, as supplemented.

A2.3.8. Intermediate command instructions and manuals applicable to range "operations".

A2.3.9. RCO authority and responsibilities.

A2.3.10. Day/night aircraft ordnance delivery patterns for all aircraft using the range.

A2.3.11. Obtain and interpret weather observations.

A2.3.12. Required weather minimums for each event.

A2.3.13. Foul criteria.

A2.3.14. Communications procedures.

A2.3.15. Capabilities and limitations of range facilities.

A2.3.16. Hazard Areas, pattern safety, WDZ, and overall range safety.

A2.3.17. Range Utilization Report/Range record keeping.

A2.3.18. EOD briefing on the proper handling of training munitions.

A2.3.19. Night operations.

A2.3.20. NVD training (if applicable) to include: human visual system, physiological issues, NVD adjustment, care, use and limitations, disorientation, and aircrew limitations as a minimum.

A2.3.21. Proper use and handling of applicable ground launched visual threats.

A2.3.22. On-range Training. A qualified RCO/ROO will supervise on-range RCO training. The ROA will develop a checklist to ensure complete and professional training. Emphasize the use of sound judgment and common sense while controlling both aircraft and personnel during range operations. The on-range training should include the following items as a minimum:

A2.3.22.1. Range Hazard Areas.

A2.3.22.2. Inspection of strafe Impact Areas.

A2.3.22.3. Range fire protection/fire suppression procedures.

A2.3.22.4. Aircraft crash procedures.

A2.3.22.5. First Aid and evacuation of injured personnel.

A2.3.22.6. Traffic conflict with other ranges in the area.

A2.3.22.7. Range pattern spacing.

A2.3.22.8. Minimum altitude measuring devices.

A2.3.22.9. Cease fire distance estimation for low angle strafe.

A2.3.22.10. Foul criteria and procedures.

A2.3.22.11. Bomb plotting and electronic strafe scoring equipment.

A2.3.22.12. Radio, other communications, and tape recorder operation.

A2.3.22.13. Lost communications procedures.

A2.3.22.14. Overall range safety.

A2.3.22.15. Night, laser, and tactical range operations (if applicable).

A2.3.22.16. Training Weapons Danger Zone tool application/

A2.3.22.17. Proper use and handling of applicable ground launched visual threats.

A2.4. Range Training Officer (RTO) Training. As a minimum, the RTO will be trained in or demonstrate adequate knowledge of the following publications or subjects:

A2.4.1. AFI 11-202, Volume 3, *General Flight Rules*.

A2.4.2. AFI 11-214

A2.4.3. Aircraft specific AFI 11-2MDS series.

A2.4.4. AFI 13-212, as supplemented.

A2.4.5. Intermediate command instructions and manuals applicable to range “operations”.

A2.4.6. RTO authority and responsibilities.

A2.4.7. Capabilities and limitations of ACTS facilities.

A2.4.8. Range safety.

Attachment 3 (Added-ANG)

ANG RANGE COUNCIL CHARTER

Figure A3.1. ANG RANGE COUNCIL CHARTER.

ANG RANGE COUNCIL CHARTER

Effective 1 December 2008

1. This charter establishes the ANG Range Council - its purpose, goal, objectives, and membership. The need for this council was recognized at the January 1988 Range conference and is outlined in AFI 13-212.

2. PURPOSE - To serve as an advisory group to the Headquarters Air National Guard Range Manager, NGB/A3AR.

3. GOAL - To increase ANG range efficiency and capability.

4. OBJECTIVES -

a. To aggressively pursue an agenda of general interest and benefit to all ANG ranges.

b. To provide consolidated positions for these issues to NGB/A3AR.

c. To provide staff support for NGB/A3AR generated range issues requiring field inputs.

d. To provide a pool of functional expertise, from ANG range personnel, for specialized needs at designated ranges.

5. The Council will consist of one voting member from each ANG Range, the 266 RANS, and one non-voting member from each AFRC range. At least eight Council members must be present (Quorum) if a decision is required on a motion/proposal. Council Chairman and Vice-Chairman will be elected every 2 years, preferably during an ANG Range Conference. Nominations will be solicited and election ballots prepared between meetings. The ANG Range Manager will be included as a non-voting member of the council.

6. The Council will meet two times annually. The meetings will be at various ANG ranges, other locations at the Council's discretion, or in the Washington, DC metropolitan area.

PATRICK C. WELCH

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